Except for USA and Canada

TC-560DA

ARCHIVEXEMPLAR

SPECIFICATIONS

Power Requirements: 16W
AC 100, 110, 117, 125, 220 or 240 V
(Voltage selector provided in the set), 50/60 Hz
DC 12 V

Track System: Four-track stereo or monaural

Reel Size: 7" (18 cm) maximum

Tape Speeds: 7 ½ ips, 3¾ ips and 1⅞ ips
(19 cm/s, 9.5 cm/s and 4.8 cm/s)

Recording Time: (with 1800 ft. tape)

Tape speed	4-track stereo	4-track mono
7½ ips (19 cm/s)	1.5 hrs.	3 hrs.
3¾ ips (9.5 cm/s)	3 hrs.	6 hrs.
1⅞ ips (4.8 cm/s)	6 hrs.	12 hrs.

Frequency Response: 30~18,000 Hz at 7½ ips (19 cm/s)
30~14,000 Hz at 3¾ ips (9.5 cm/s)
30~10,000 Hz at 1⅞ ips (4.8 cm/s)

Signal-to-Noise Ratio: 52 dB

Flutter and Wow: 0.07 % at 7½ ips (19 cm/s)

Recording Bias Frequency: Approx. 85 kHz

Inputs: Two MIC inputs
Impedance : 600Ω
Maximum sensitivity: 0.2 mV (-72 dB)
Two AUX INputs
Impedance : 100 kΩ
Maximum sensitivity : 61 mV (–22 dB)
REC/PB connector
Impedance : 86 kΩ
Maximum sensitivity : 30m V (–28 dB)

Outputs: Two LINE OUTputs
Impedance : 100 kΩ
Output level : 0.775 V (0 dB)
REC/PB connector
Impedance : 10 kΩ
Output level : 0.775 V (0 dB)
HEADPHONE output
Impedance : 8 Ω load or more
Output level : 30m V (–28 dB) with 10 kΩ load

Semiconductors: 31 transistors and 18 diodes

Dimensions: 16⅜(W) x 6¹¹⁄₁₆(H) x 15⁷⁄₁₆"(D)
(415 x 170 x 392 mm)

Weight: 28 lb 11 oz (13 kg)

SONY®

SERVICE MANUAL

1867

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1. BLOCK DIAGRAM

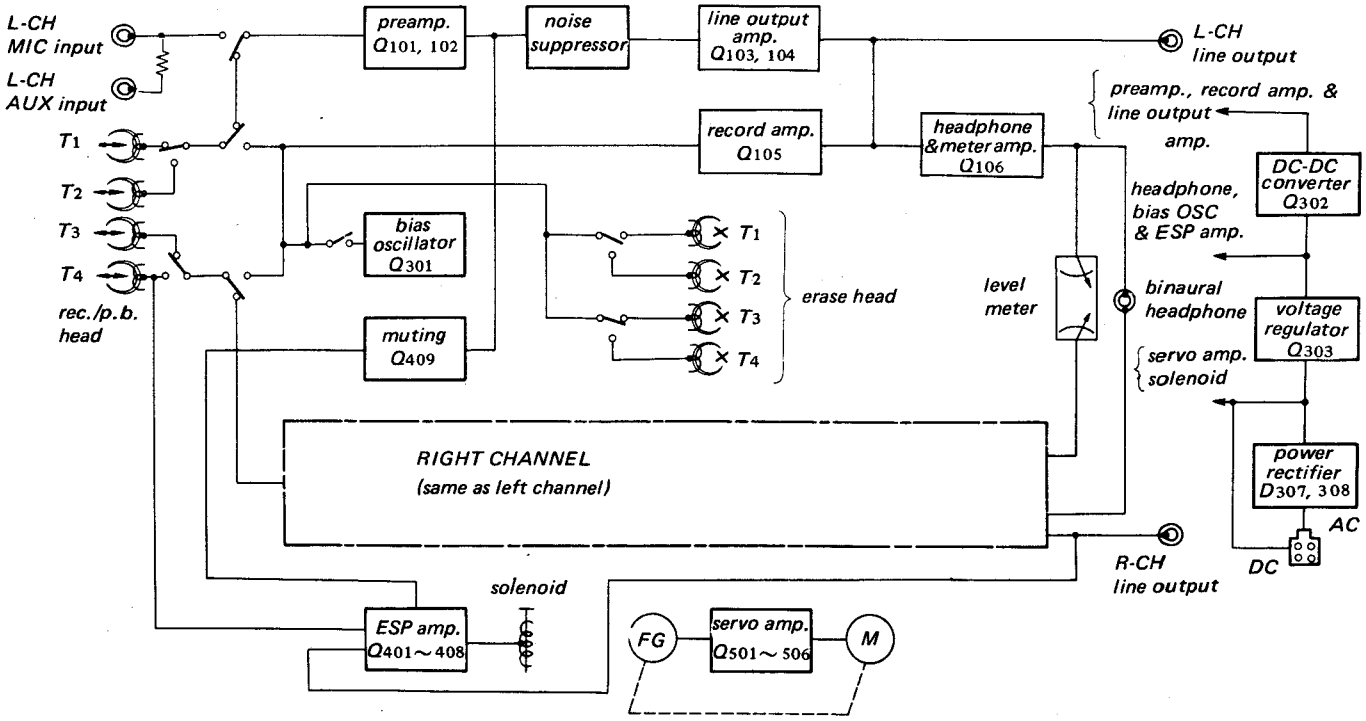


Fig. 1-1 Block Diagram

2. GENERAL DESCRIPTION

SONY Model TC-560DA which is the deck type of TC-560 is a high quality four-track stereo tape recorder equipped with ESP (Electronic Sensory Perception) automatic reverse system and servo-controlled low speed DC motor.

This machine can be operated on either AC power source or DC-12 volt battery.

3. TECHNICAL FEATURES

3-1. Tape Transport Mechanism

This machine has two capstans with flywheels which rotate in just opposite directions each other by a drive belt, and one of the two pinch rollers is pressed against the respective capstan.

Reel tables rotate smoothly with belts driven by flywheels. In forward (reverse) mode, felt friction gives proper back tension to supply reel table.

While feeding the tape in fast forward (fast reverse) mode, the supply reel table is free from the tension and motor rotates at high speed.

3-2. Motor

Drive motor is a low speed DC motor equipped with F.G. (frequency generator) which keeps the speed of the motor constant through the servo mechanism. If the speed of the motor is changed by any phenomenon, the servo amplifier circuit detects the frequency deviation and restores the speed with accuracy and that at once.

In fast forward (fast reverse) mode, the motor runs freely by being isolated from the servo amplifier. The deviation between +5% and -10% for each speed is also available by using TAPE SPEED CONTROL (SONY optional accessory, model RM-6).

3-3. ESP Automatic Reverse System

In forward playback mode, the tape transport reverses automatically at 8 seconds after both of signals recorded on tracks 3 and 4 are over.

ESP circuit detects the signal recorded on track 4 from the playback head and also detects the signal on track 3 from Line Output of right channel.

Tape reverse can be operated by this ESP automatic system or by function selector knob.

When function selector is placed in playback forward mode, ESP circuit is powered ON and acts as follows:

(1) When reproduced signal is applied to Q406, it turns ON.
(2) C408 is charged and base voltage of Q405 increases.
(3) When the voltage of C408 amounts to 4 volts, Q405 turns QN and collector voltage of Q405 decreases.
(4) Q404 turns OFF since collector voltage of Q405 decreases.
(5) Q407 keeps ON because the charged voltage of C408 is applied to base of Q407 through R421 and D402.
(6) Although, if input signal dies away to zero, Q406 becomes OFF and C408 discharges through R420, R421 and R424 to ground.
(7) When voltage of C408 falls to 2 volts, Q407 turns OFF.
(8) Then Q408 turns ON since base voltage of Q408 increases.
(9) Collector current of Q408 flows and Plunger operates for reverse action.
(10) + B voltage of ESP circuit is cut-off by direction-change switch operated by plunger.

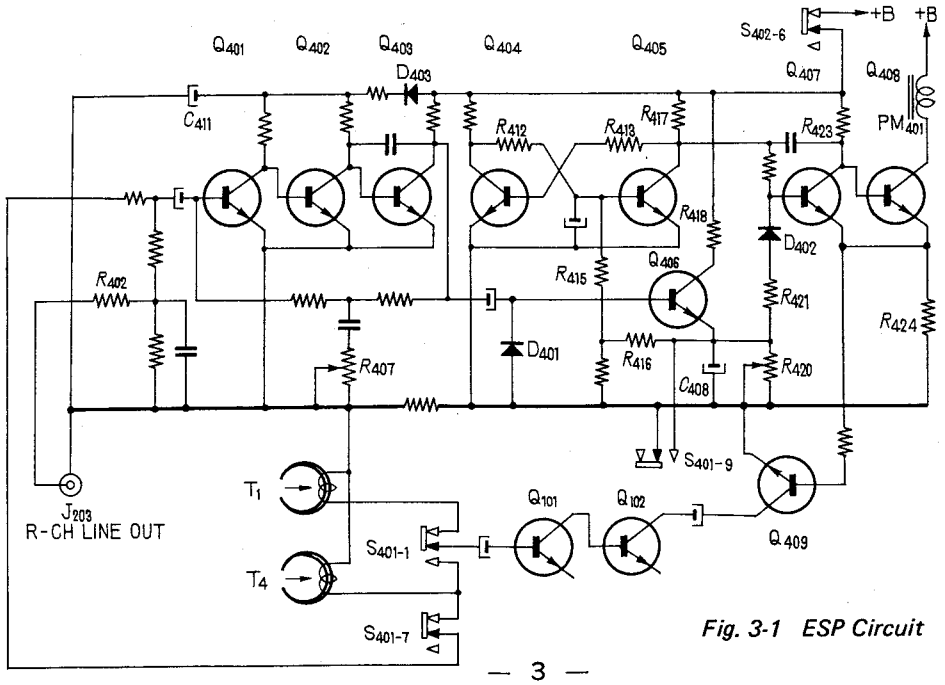


Fig. 3-1 ESP Circuit

4. CABINET - TOP VIEW

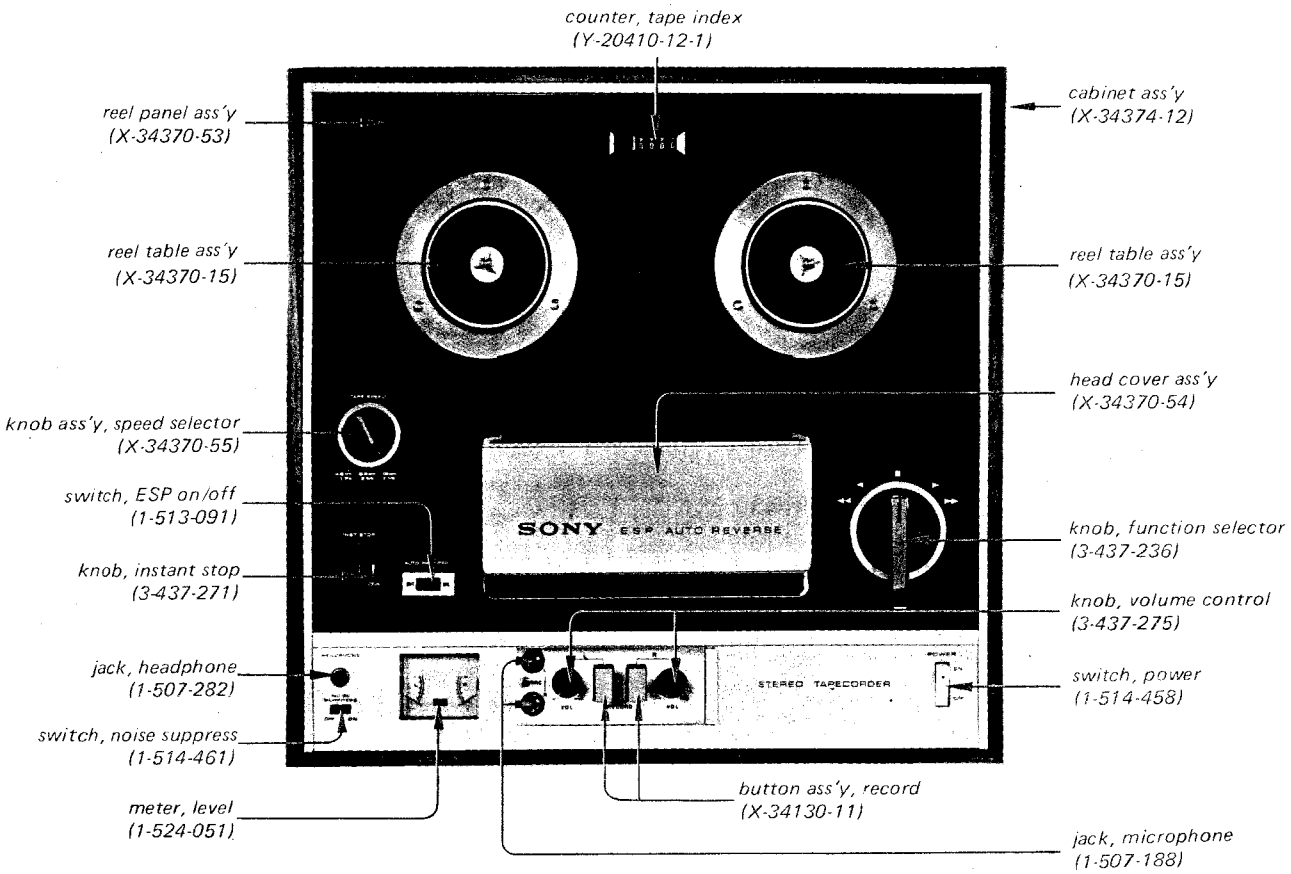


Fig. 4-1 Cabinet-Top View

5. CABINET - SIDE VIEW

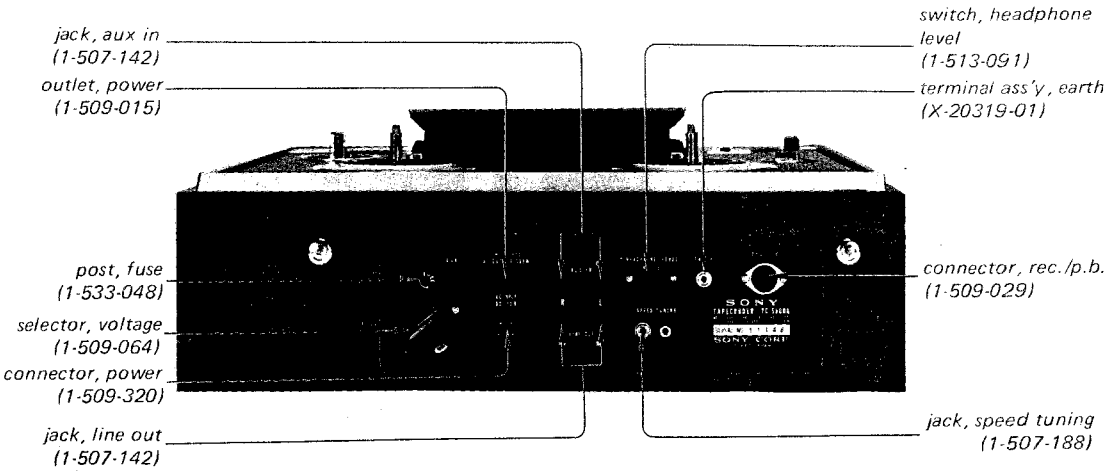


Fig. 5-1 Cabinet-Side View

6. CHASSIS - TOP VIEW

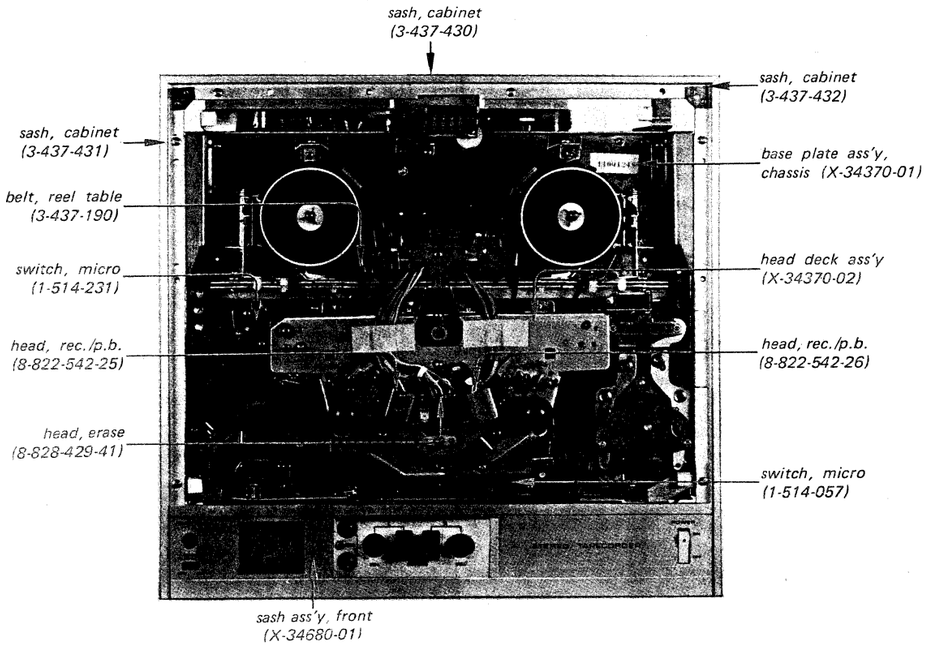


Fig. 6-1 Chassis-Top View

7. CHASSIS - BOTTOM VIEW

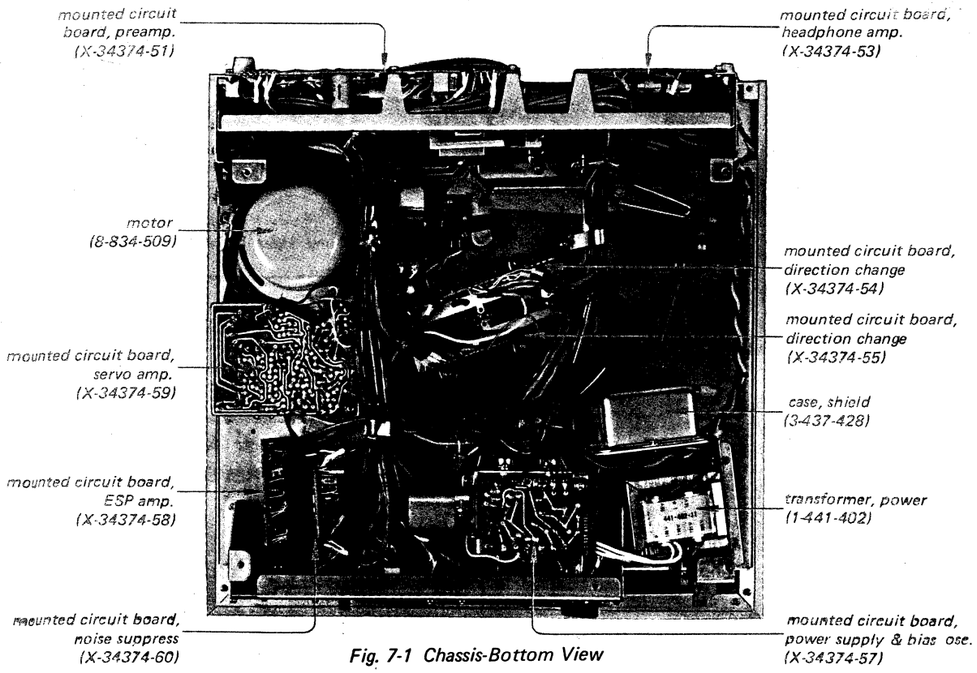

mounted circuit board, preamp. (X-34374-51)
mounted circuit board, headphone amp. (X-34374-53)
motor (8-834-509)
mounted circuit board, direction change (X-34374-54)
mounted circuit board, direction change (X-34374-55)
mounted circuit board, servo amp. (X-34374-59)
case, shield (3-437-428)
mounted circuit board, ESP amp. (X-34374-58)
transformer, power (1-441-402)
mounted circuit board, noise suppress (X-34374-60)
mounted circuit board, power supply & bias osc. (X-34374-57)

Fig. 7-1 Chassis-Bottom View

8. DISASSEMBLY

1

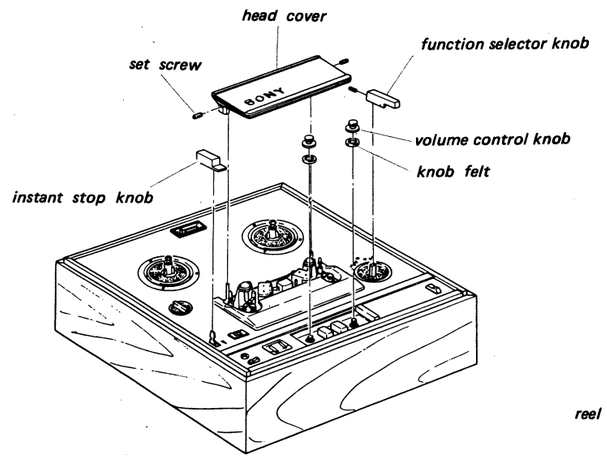


Fig. 8-1 Head Cover & Knob Removal

2

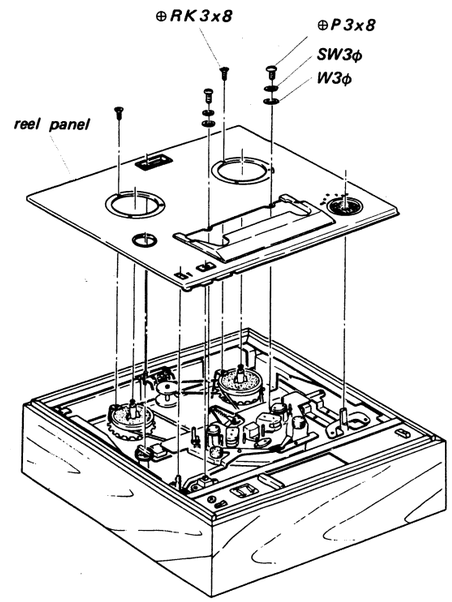


Fig. 8-2 Reel Panel Removal

3

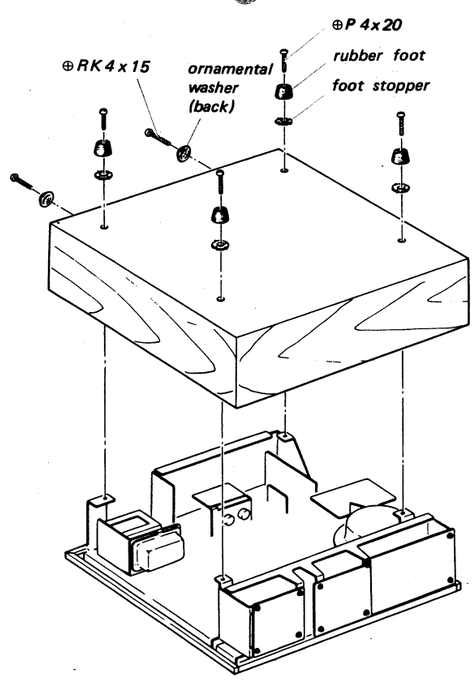
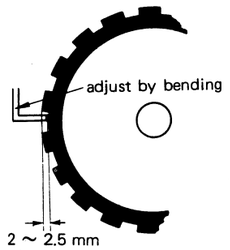


Fig. 8-3 Chassis Removal

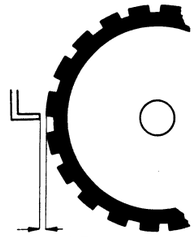
9. MECHANICAL ADJUSTMENT

Reel Table Lock Lever Adjustment

Feed side in FORWARD/REVERSE mode

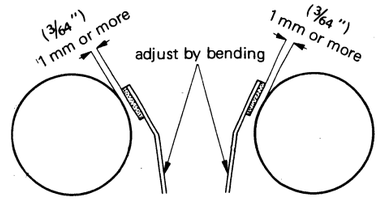


Take-up side in FORWARD/REVERSE mode
both sides in FAST FORWARD/FAST REVERSE mode



②

Back Tension Lever Adjustment
in STOP & FORWARD/REVERSE mode



①

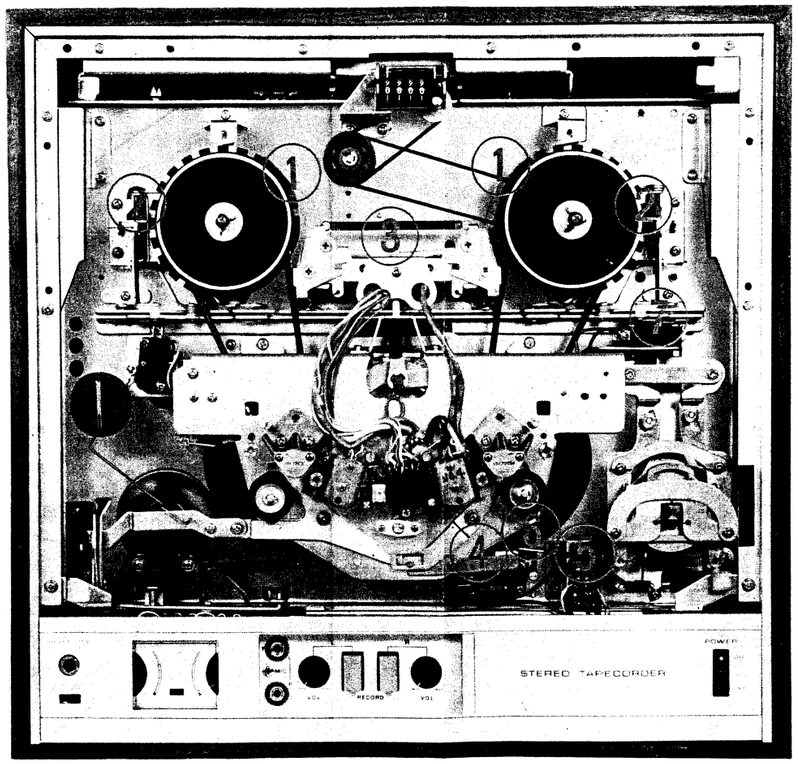
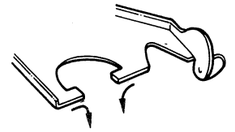


Fig. 10-1 Adjusting Positions

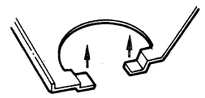
Reel Table Friction Change Lever Adjustment

In case feed reel table does not stop moving in FAST FORWARD/FAST REVERSE mode, bend tabs of the lever B downwards as shown.



lever B

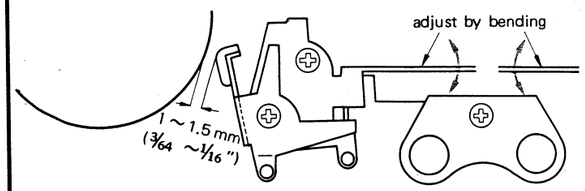
In case take-up belt still moves while holding take-up reel table in FAST FORWARD/FAST REVERSE mode, bend tabs of the lever A upwards as shown.



lever A

②

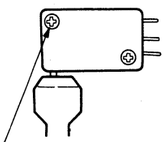
Brake Adjustment
in FORWARD/REVERSE mode



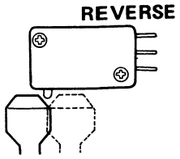
③

F.F. Micro Switch Adjustment

in STOP mode



in FAST FORWARD/FAST REVERSE mode

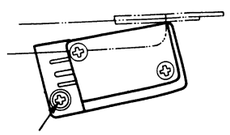


Loosen this screw and adjust the position of the switch.

⑦

Instant Stop Micro Switch Adjustment

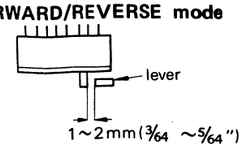
in FORWARD/REVERSE mode



Adjust position of switch by loosening screw so that pin plunger of switch is pushed into switch housing when pulling instant stop lever toward you.

④

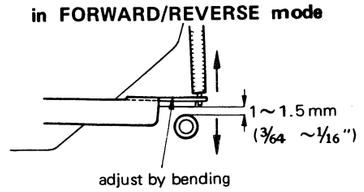
Muting Switch Adjustment
in FORWARD/REVERSE mode



Adjust the position of the switch.

⑤

Brake Shifter Lever Adjustment
in FORWARD/REVERSE mode

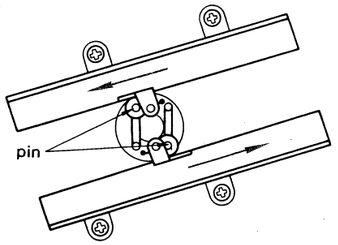


⑥

— Continued —

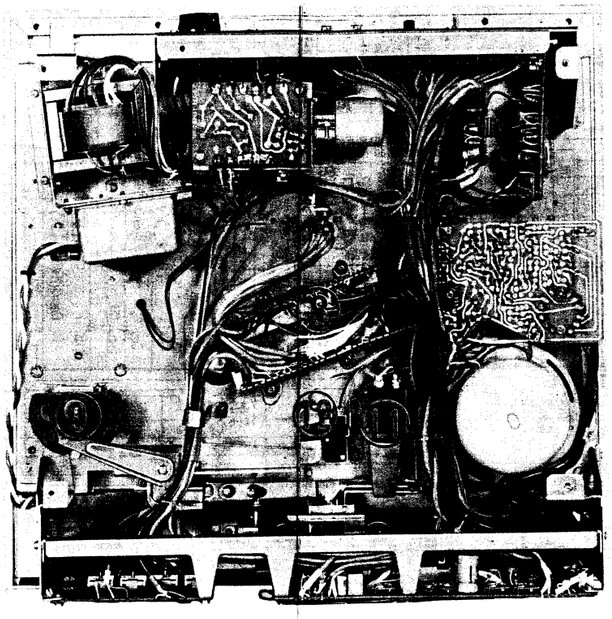
Forward/Reverse Selector Switch Adjustment

in FORWARD mode



Loosen four screws. Slide the switch boards in the direction shown by each arrow to the limit and tighten the screws.

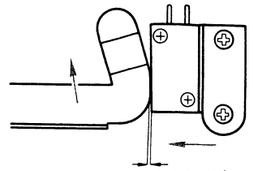
(8)



(12)

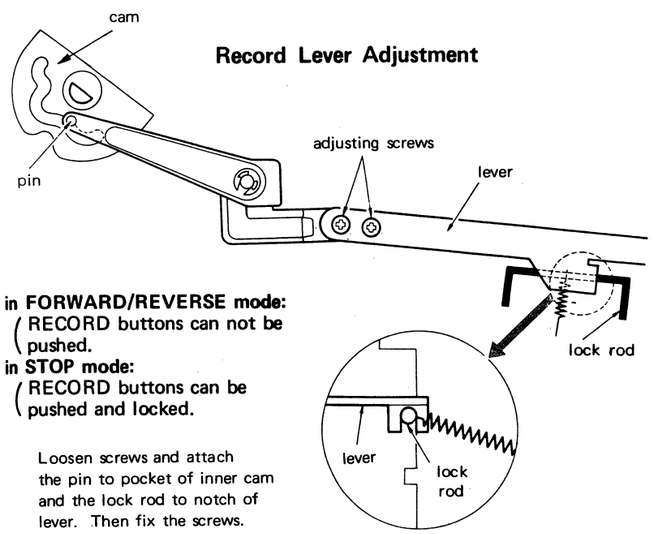
Power ON/OFF Micro Switch Adjustment

in STOP mode



(9)

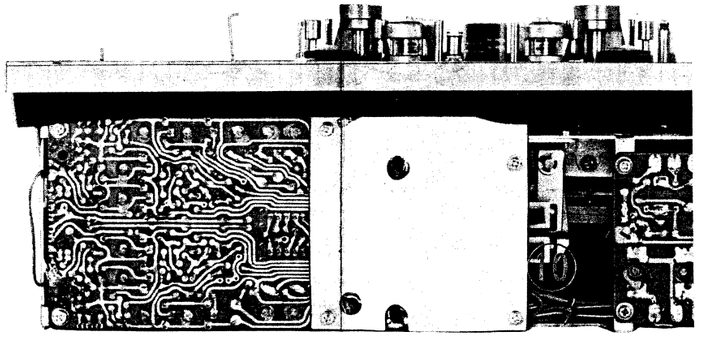
Record Lever Adjustment



in FORWARD/REVERSE mode:
RECORD buttons can not be pushed.

in STOP mode:
RECORD buttons can be pushed and locked.

Loosen screws and attach the pin to pocket of inner cam and the lock rod to notch of lever. Then fix the screws.



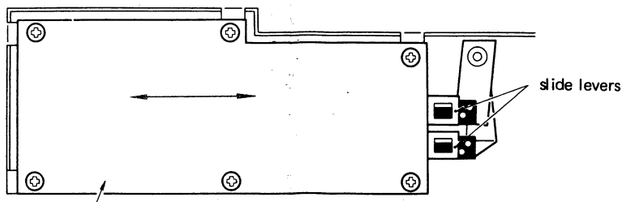
(10)

Record Slide Switch Adjustment

in STOP mode

Lock RECORD buttons, and slide levers are in pulled-out position.

Unlock RECORD buttons, and slide levers are in pushed-in position.
If not, loosen six screws and adjust to the proper position.

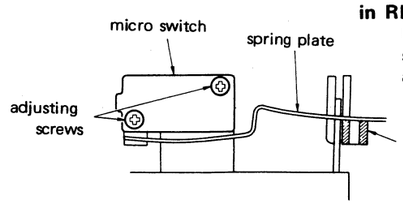


(11)

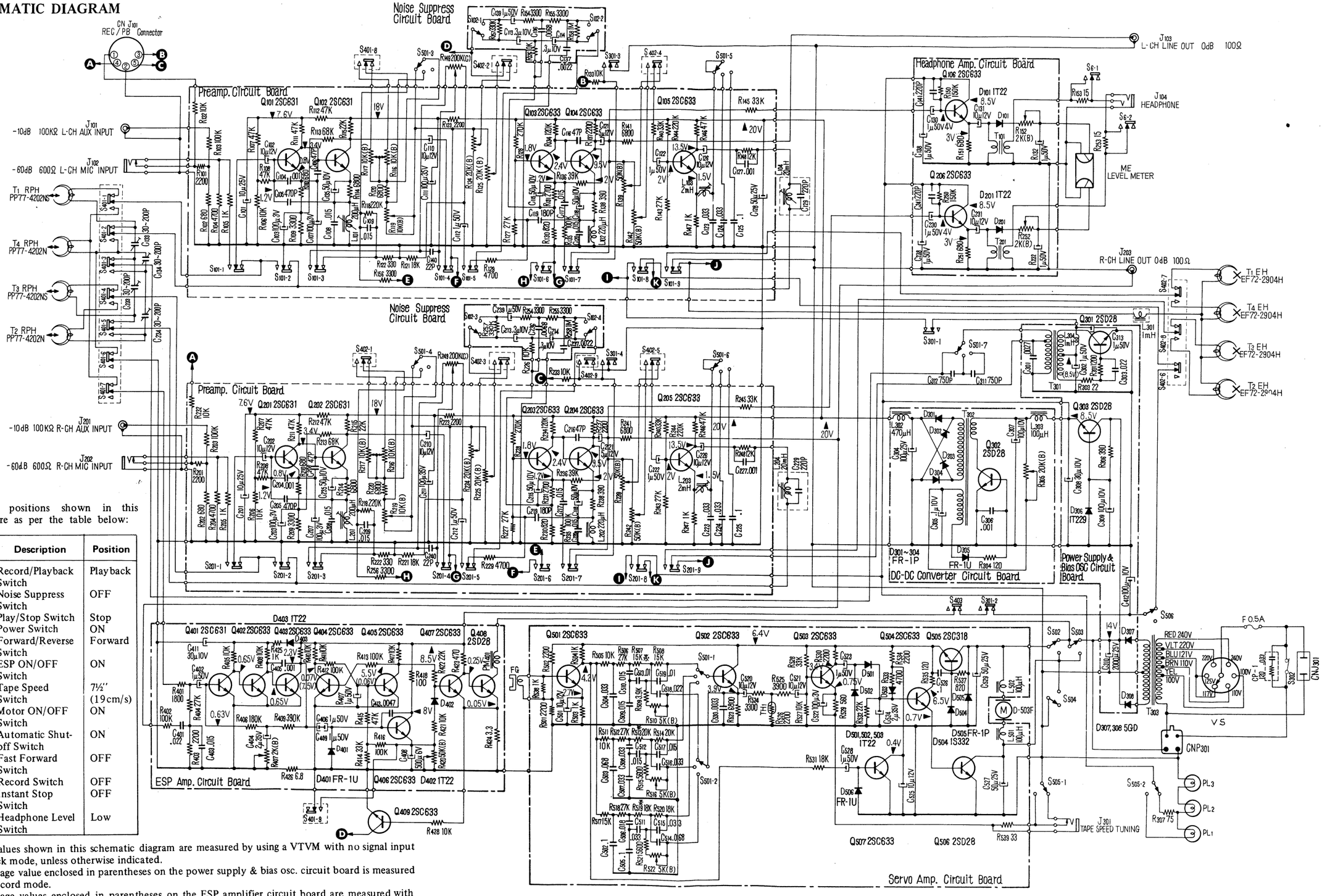
Micro Switch Adjustment

in RECORD mode

Loosen the screws and set two micro switches at switch-on position.



10. SCHEMATIC DIAGRAM



Note:

(1) Switching positions shown in this diagram are as per the table below:

Switch No.	Description	Position
S101 201	Record/Playback Switch	Playback
S102	Noise Suppress Switch	OFF
S301	Play/Stop Switch	Stop
S302	Power Switch	ON
S401, 402	Forward/Reverse Switch	Forward
S403	ESP ON/OFF Switch	ON
S501	Tape Speed Switch	7½" (19cm/s)
S502	Motor ON/OFF Switch	ON
S503	Automatic Shut-off Switch	ON
S504	Fast Forward Switch	OFF
S505	Record Switch	OFF
S506	Instant Stop Switch	OFF
S6	Headphone Level Switch	Low

(2) Voltage values shown in this schematic diagram are measured by using a VTVM with no signal input in playback mode, unless otherwise indicated.
- Voltage value enclosed in parentheses on the power supply & bias osc. circuit board is measured in record mode.
- Voltage values enclosed in parentheses on the ESP amplifier circuit board are measured with signal input.
- Variations may be noted because of normal production tolerances.

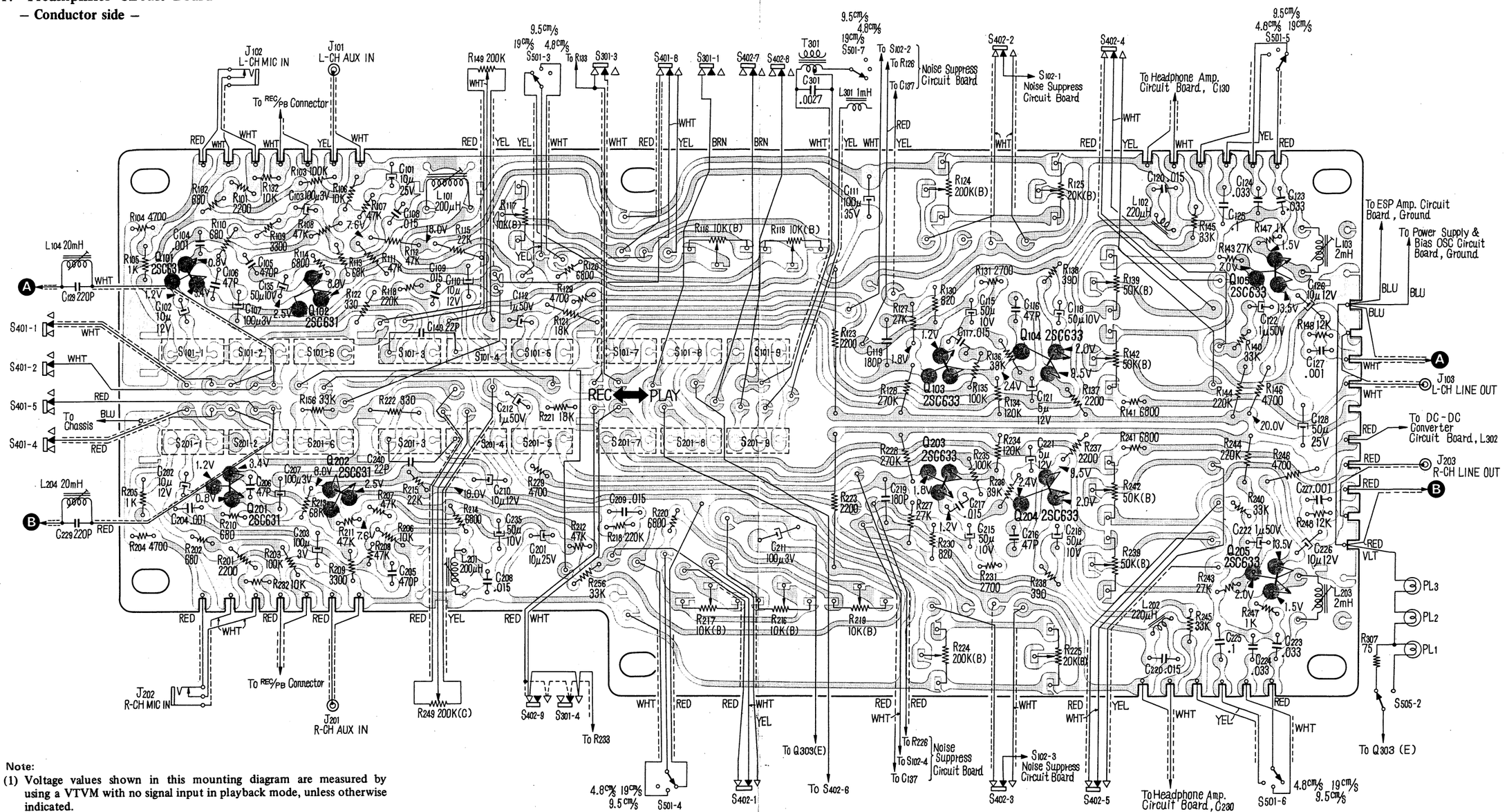
(3) The letters (B) & (C) suffixed to rating value of potentiometer show its characteristics.

(4) All resistors and capacitors are rated in Ω and μF respectively unless otherwise indicated.

11. MOUNTING DIAGRAM

11-1. Preamplifier Circuit Board

– Conductor side –



Note:

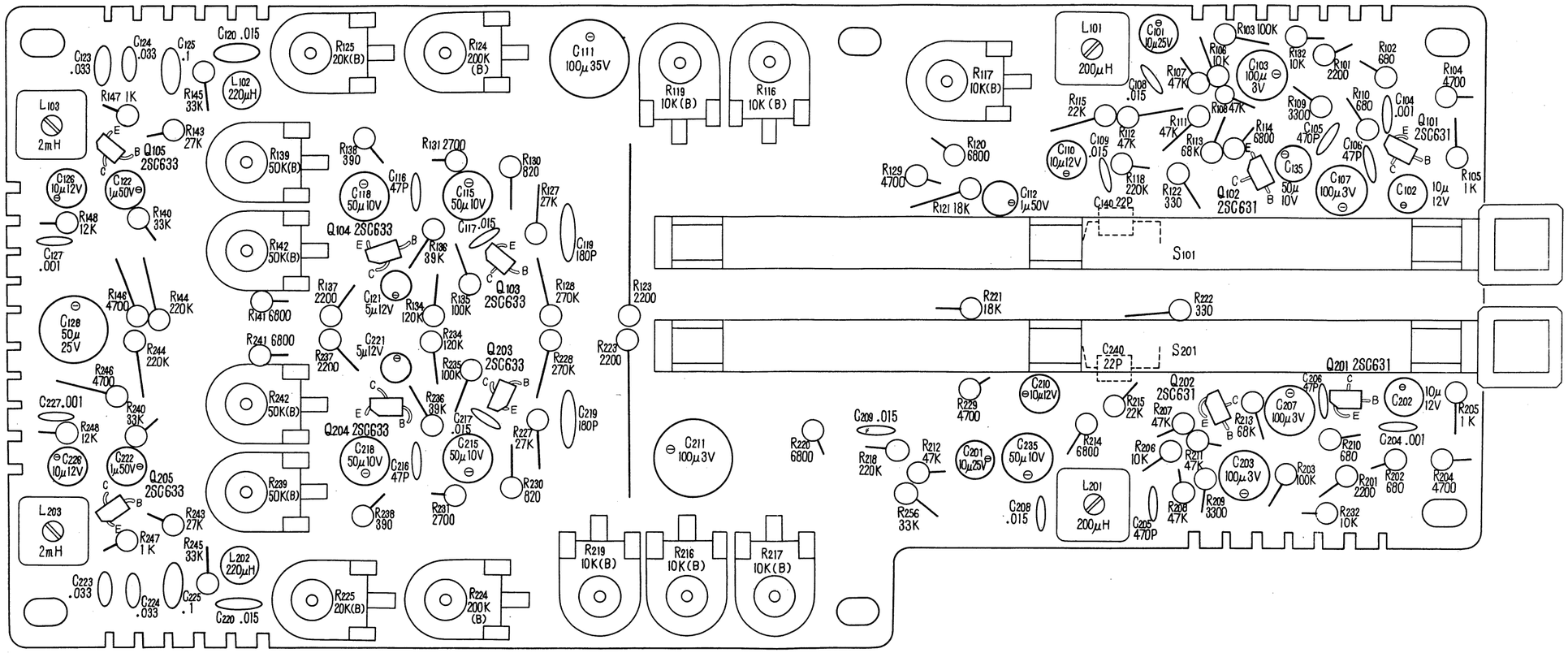
(1) Voltage values shown in this mounting diagram are measured by using a VTVM with no signal input in playback mode, unless otherwise indicated.
   ○ Variations may be noted because of normal production tolerances.

(2) All resistors and capacitors are rated in Ω and μF respectively unless otherwise indicated.

Printed circuit board
Part No. 1-538-693-11

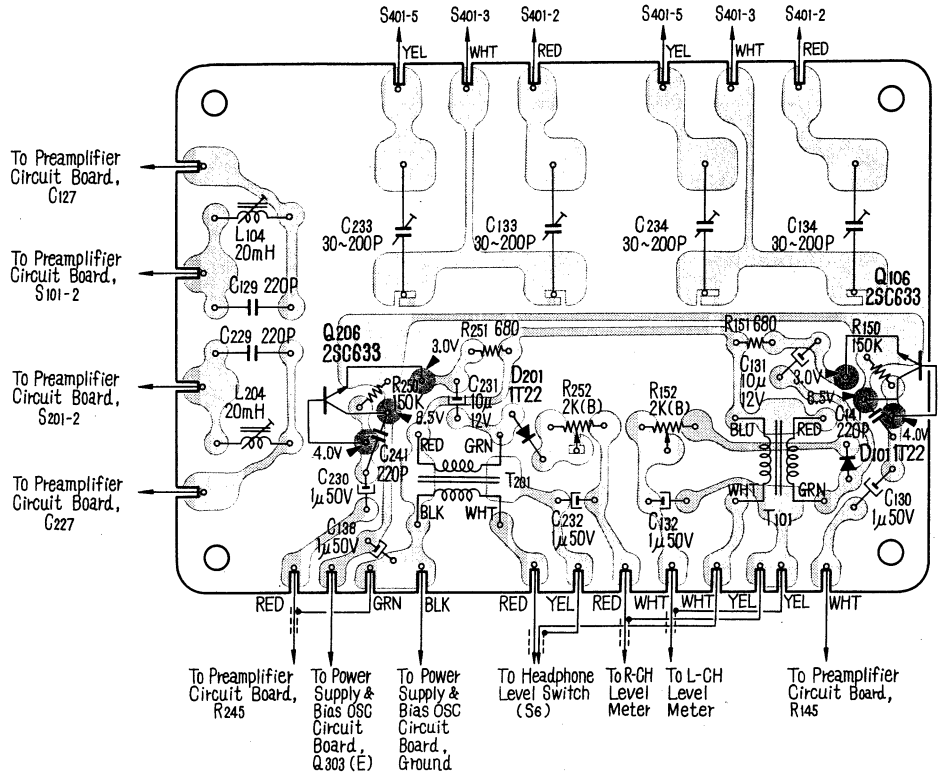
11-1. Preamplifier Circuit Board

– Component side –



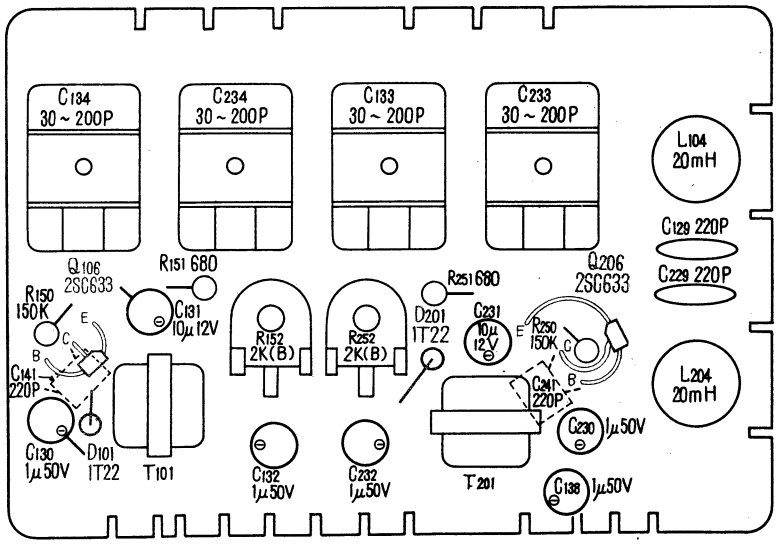
11-2. Headphone Amplifier Circuit Board

– Conductor side –



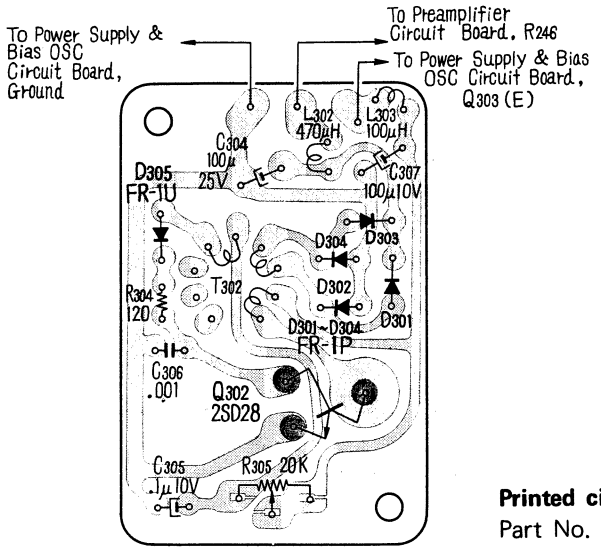
Printed circuit board
Part No. 1-538-692-11

– Component side –



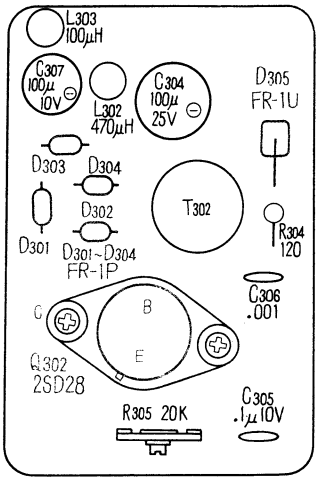
11-3. DC-DC Converter Circuit Board

– Conductor side –



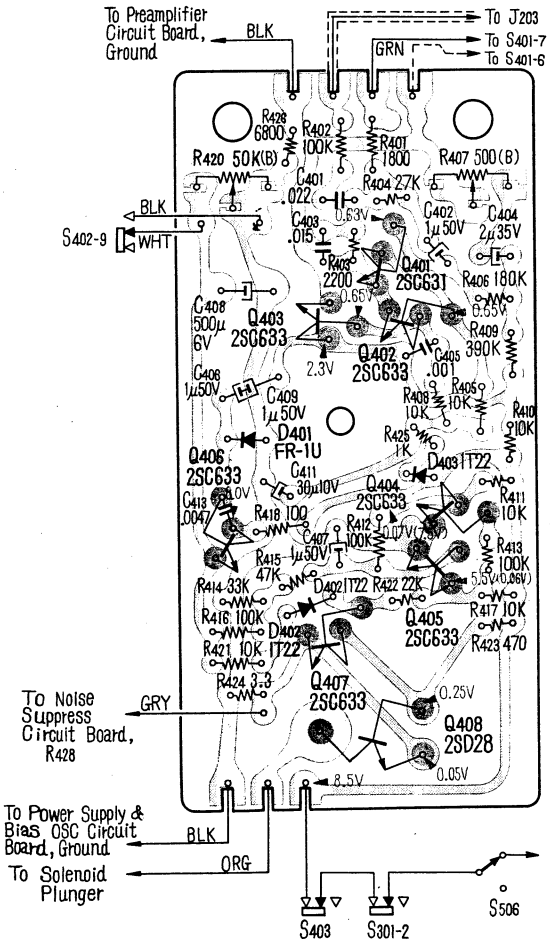
Printed circuit board
Part No. 1-538-657-11

– Component side –



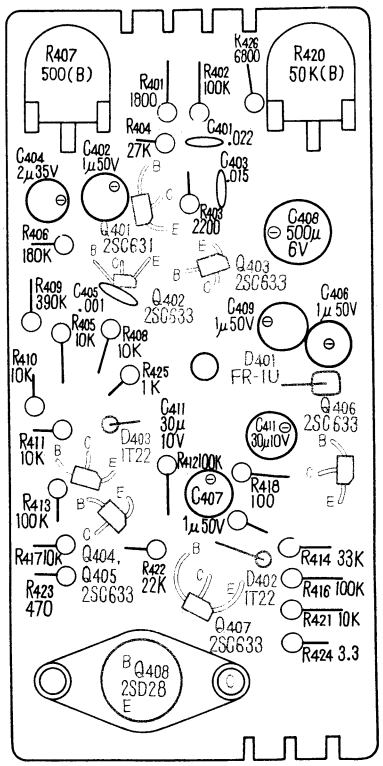
11-4. ESP Amplifier Circuit Board

– Conductor side –



Printed circuit board
Part No. 1-538-659-13

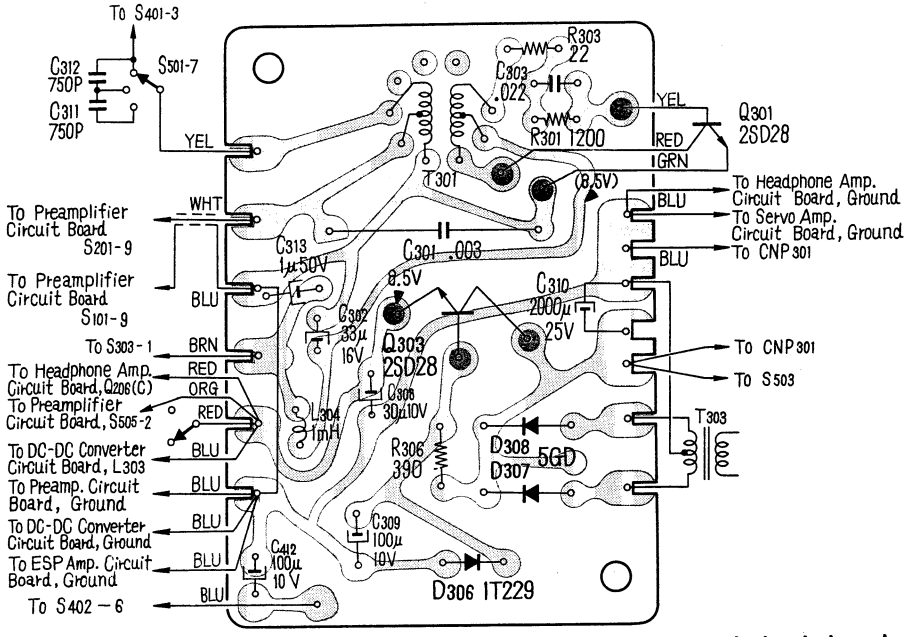
– Component side –



o Voltage values enclosed in parentheses on the ESP amplifier circuit board are measured with signal input.

11-5. Power Supply & Bias OSC Circuit Board

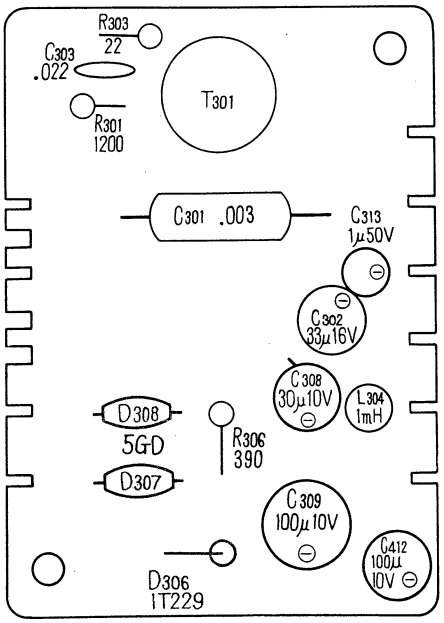
– Conductor side –



Printed circuit board
Part No. 1-538-691-12

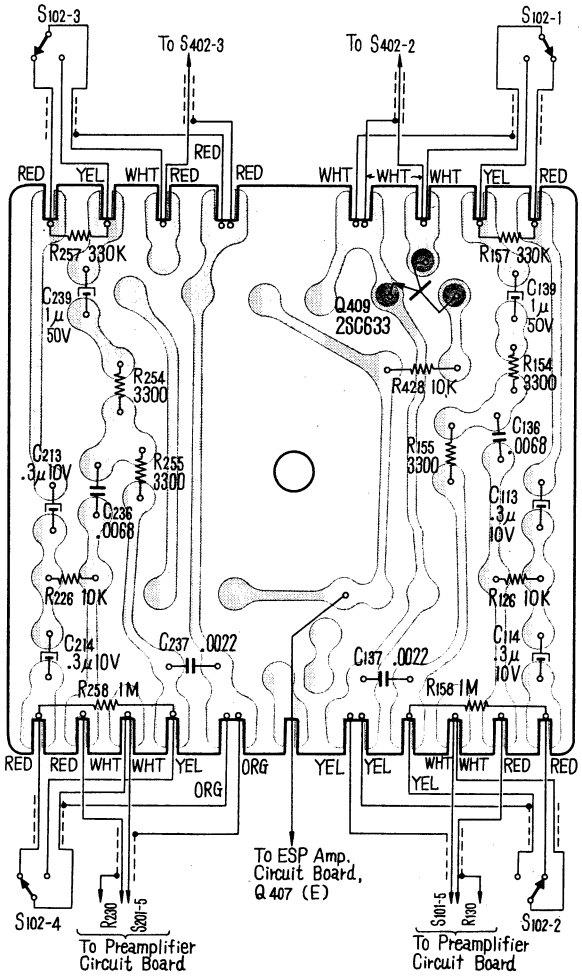
○ Voltage value enclosed in parentheses is measured in record mode.

– Component side –



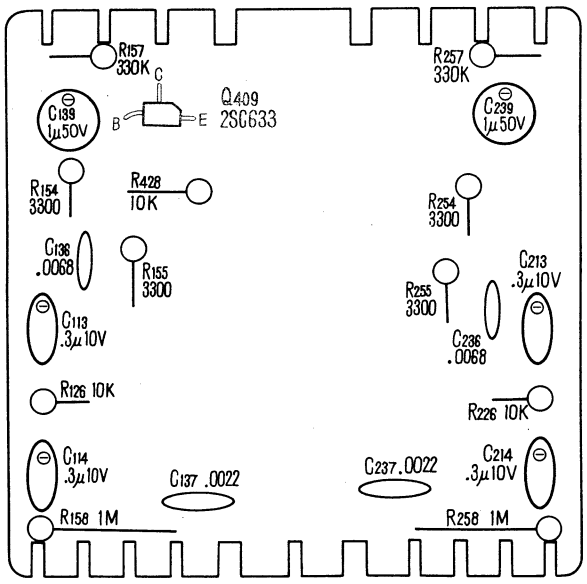
11-6. Noise Suppress Circuit Board

– Conductor side –



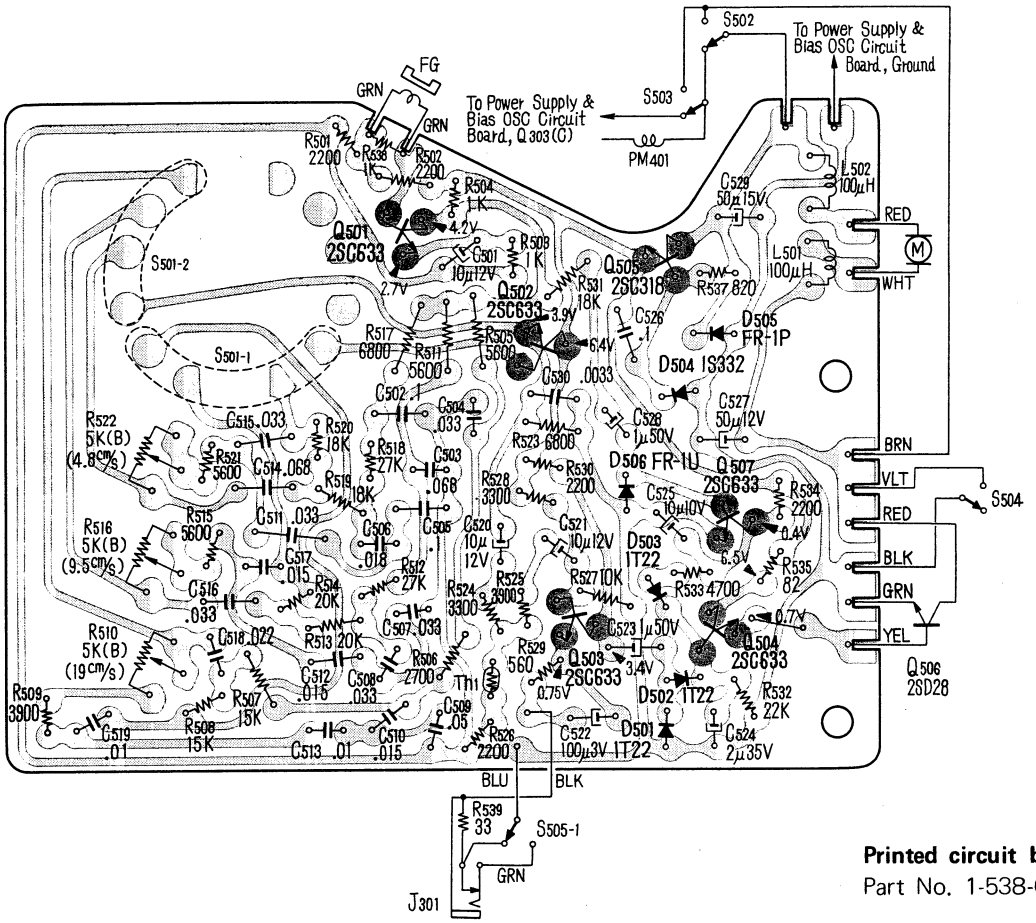
Printed circuit board
Part No. 1-538-697-12

– Component side –



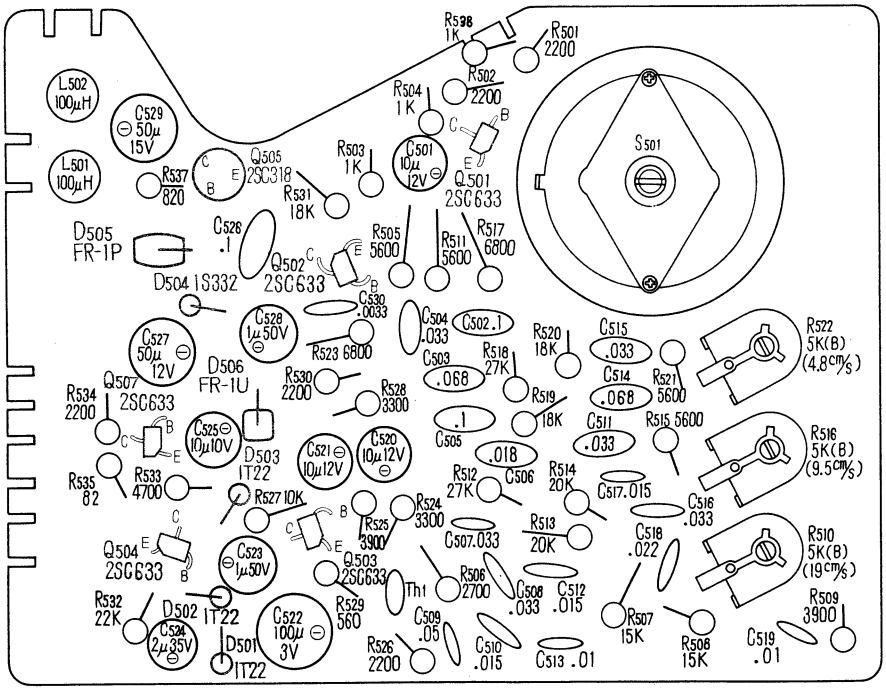
11-7. Servo Amplifier Circuit Board

– Conductor side –



Printed circuit board
Part No. 1-538-660-11

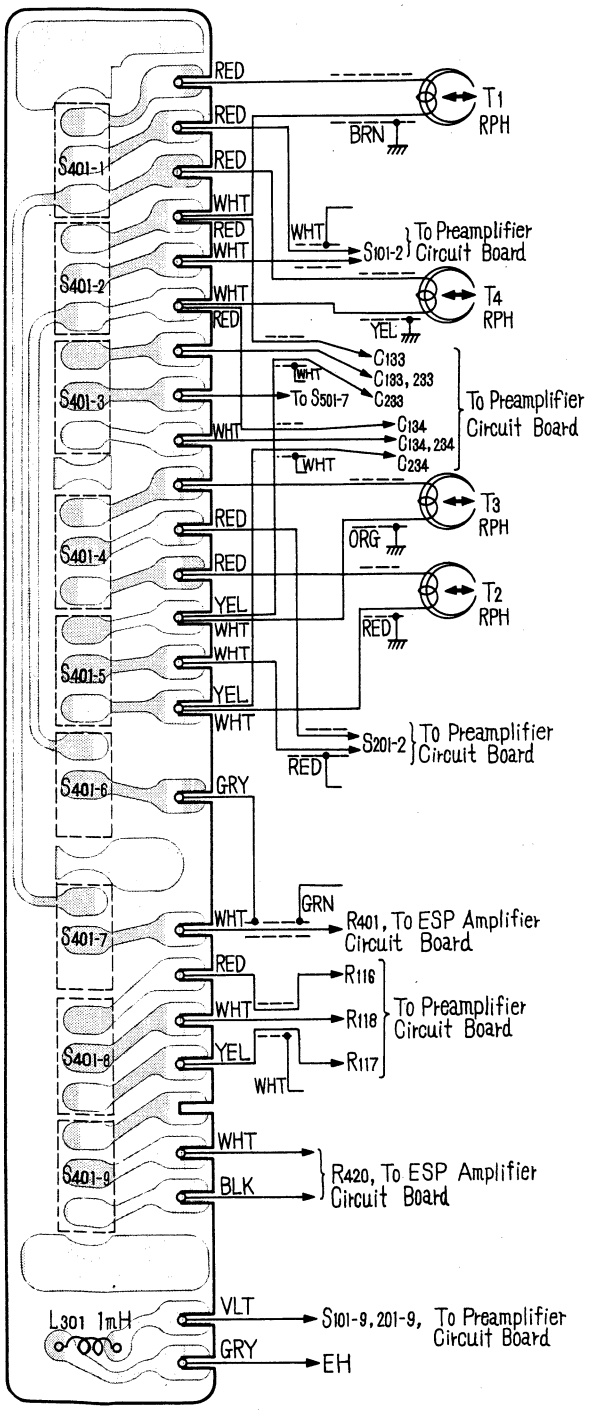
– Component side –



11-8. Forward/Reverse Selector Circuit Board

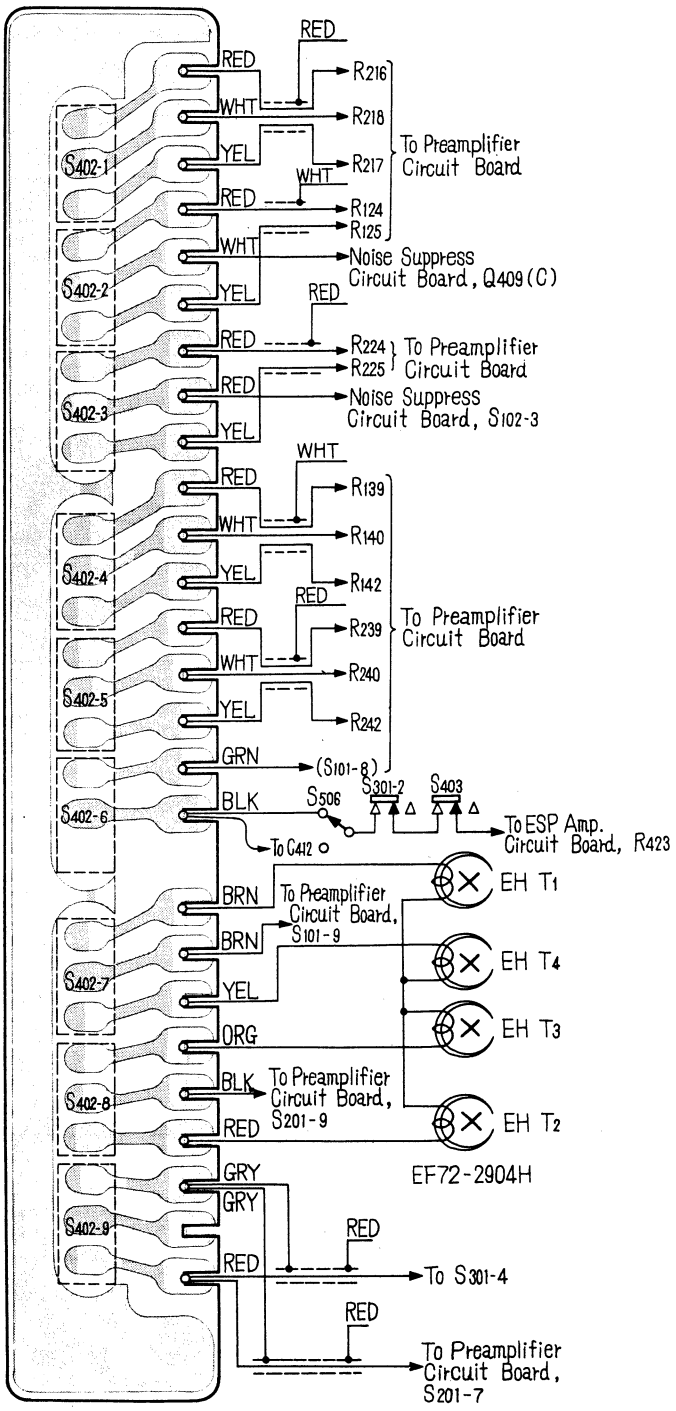
– Conductor side –

(A)



Printed circuit board
Part No. 1-538-689-11

(B)



Printed circuit board
Part No. 1-538-690-11

12. ELECTRICAL PARTS LIST

Symbol	Part No.	Description	Symbol	Part No.	Description
$Q_{101,201}$		Transistor 2SC631	S_{403}	1-513-091-06	Switch, ESP on/off
$Q_{102,202}$		" 2SC631	S_{501}	-362-	" tape speed
$Q_{103,203}$		" 2SC633	S_{502}	1-514-231-	" motor on/off
$Q_{104,204}$		" 2SC633	S_{503}	-231-	" automatic shut-off
$Q_{105,205}$		" 2SC633	S_{504}	-057-	" fast forward
$Q_{106,206}$		" 2SC633	S_{505-1}	-057-	" record
Q_{301}		" 2SD28	S_{505-2}	-057-	" "
Q_{302}		" 2SD28	S_{506}	-057-	" instant stop
Q_{303}		" 2SD28	S_6	1-513-091-06	" headphone level
Q_{401}		" 2SC631			
Q_{402}		" 2SC633	$J_{101,201}$	1-507-142-13	Jack, auxiliary input
Q_{403}		" 2SC633	$J_{102,202}$	-188-12	" microphone
Q_{404}		" 2SC633	$J_{103,203}$	-142-13	" line output
Q_{405}		" 2SC633	J_{104}	-282-21	" binaural headphone
Q_{406}		" 2SC633	J_{301}	-188-12	" speed tuning
Q_{407}		" 2SC633			"
Q_{408}		" 2SD28	CNP_{301}	1-509-015-	Connector, AC/DC
Q_{409}		" 2SC633			
Q_{501}		" 2SC633	CNJ_{101}	1-509-029-	Connector, rec./p.b.
Q_{502}		" 2SC633	CNJ_{301}	-320-	" , AC/DC
Q_{503}		" 2SC633			
Q_{504}		" 2SC633	PM_{401}	1-452-021-	Solenoid, reverse
Q_{505}		" 2SC318			
Q_{506}		" 2SD28	PL_1	1-518-051-11	Lamp, pilot
Q_{507}		" 2SC633	PL_2	-051-11	" "
			PL_3	-051-11	" "
$D_{101,201}$		Diode 1T22			
D_{301}		" FR-1P	VS	1-509-064-12	Selector, voltage
D_{302}		" FR-1P			
D_{303}		" FR-1P	ME	1-509-064-13S	Meter, level
D_{304}		" FR-1P			
D_{305}		" FR-1U	M	8-834-509-01	Motor
D_{306}		" 1T229			
D_{307}		" 5GD	F	1-532-094-	Fuse
D_{308}		" 5GD			
D_{401}		" FR-1U	CP-1	1-231-057-	Component, encapsulated
D_{402}		" 1T22			
D_{403}		" 1T22	$T_{101,201}$	1-427-217-	Transformer, headphone
D_{501}		" 1T22	T_{301}	1-433-116-	" oscillator
D_{502}		" 1T22	T_{302}	1-441-339-	" converter
D_{503}		" 1T22	T_{303}	-402-	" power
D_{504}		" 1S332			
D_{505}		" FR-1P	$L_{101,201}$	1-409-083-	Coil, trap; 200μH
D_{506}		" FR-1U	$L_{102,202}$	1-407-173-	Inductor, micro; 220μH
			$L_{103,203}$	1-409-130-	Coil, trap; 2mH
TH_1		Thermistor S-1250	$L_{104,204}$	-094-13	" " ; 16~24mH
			L_{301}	1-431-038-	" , dummy; 1mH
RPH^{T2}_{T4}	8-822-542-25	Head, rec/p.b.; PP77-4202A	L_{302}	1-407-125-	Inductor, micro; 470μH
RPH^{T1}_{T3}	-542-26	" ; PP77-4202B	L_{303}	-120-	" " ; 100μH
$EH_{T1\sim4}$	8-828-429-41	" , ERASE; EF72-2904H	L_{501}	-098-	" " ; 100μH
			L_{502}	-098-	" " ; 100μH
$S_{101,201}$	1-513-220-	Switch, rec./p.b.			
S_{102}	1-514-461-	" noise suppress	$R_{101,201}$	1-242-681-	Resistor 2.2kΩ ¼W, carbon
S_{301}	-232-	" play/stop	$R_{102,202}$	-669-	" 680Ω " "
S_{302}	-458-15S	" power	$R_{103,203}$	-721-	" 100kΩ " "
S_{401}	1-513-220-	" forward/reverse	$R_{104,204}$	-689-	" 4.7kΩ " "
S_{402}	-220-	" "	$R_{105,205}$	-673-	" 1kΩ " "

– Continued –

Symbol	Part No.	Description
$R_{106,206}$	1-242-697-	Resistor 10kΩ ¼W, carbon
$R_{107,207}$	-713-	" 47kΩ " "
$R_{108,208}$	-713-	" 47kΩ " "
$R_{109,209}$	-685-	" 3.3kΩ " "
$R_{110,210}$	-669-	" 680Ω " "
$R_{111,211}$	-713-	" 47kΩ " "
$R_{112,212}$	-713-	" 47kΩ " "
$R_{113,213}$	-717-	" 68kΩ " "
$R_{114,214}$	-693-	" 6.8kΩ " "
$R_{115,215}$	-705-	" 22kΩ " "
$R_{116,216}$	1-221-401-	" 10kΩ(B), adjustable
$R_{117,217}$	-401-	" 10kΩ(B), "
$R_{118,218}$	1-242-729-	" 220kΩ ¼W, carbon
$R_{119,219}$	1-221-401-	" 10kΩ(B), adjustable
$R_{120,220}$	1-242-693-	" 6.8kΩ ¼W, carbon
$R_{121,221}$	-703-	" 18kΩ " "
$R_{122,222}$	-661-	" 330Ω " "
$R_{123,223}$	1-244-681-	" 2.2kΩ " "
$R_{124,224}$	1-221-952-	" 20kΩ(B), adjustable
$R_{125,225}$	-952-	" 20kΩ(B), "
$R_{126,226}$	1-242-697-	" 10kΩ ¼W, carbon
$R_{127,227}$	-707-	" 27kΩ " "
$R_{128,228}$	-731-	" 270kΩ " "
$R_{129,229}$	-689-	" 4.7kΩ " "
$R_{130,230}$	-671-	" 820Ω " "
$R_{131,231}$	-683-	" 2.7kΩ " "
$R_{132,232}$	-697-	" 10kΩ " "
$R_{133,233}$	1-244-697-	" 10kΩ " "
$R_{134,234}$	1-242-723-	" 120kΩ " "
$R_{135,235}$	-721-	" 100kΩ " "
$R_{136,236}$	-711-	" 39kΩ " "
$R_{137,237}$	-681-	" 2.2kΩ " "
$R_{138,238}$	-663-	" 390Ω " "
$R_{139,239}$	1-221-953-	" 50kΩ(B), adjustable
$R_{140,240}$	1-242-709-	" 33kΩ ¼W, carbon
$R_{141,241}$	-693-	" 6.8kΩ " "
$R_{142,242}$	1-221-953-	" 50kΩ(B), adjustable
$R_{143,243}$	1-242-707-	" 27kΩ ¼W, carbon
$R_{144,244}$	-729-	" 220kΩ " "
$R_{145,245}$	-709-	" 33kΩ " "
$R_{146,246}$	-689-	" 4.7kΩ " "
$R_{147,247}$	-673-	" 1kΩ " "
$R_{148,248}$	-699-	" 12kΩ " "
$R_{149,249}$	1-221-923-	" 200kΩ(C), potentiometer
$R_{150,250}$	1-242-725-	" 150kΩ ¼W, carbon
$R_{151,251}$	-669-	" 680Ω " "
$R_{152,252}$	1-221-962-	" 2kΩ (B), adjustable
$R_{153,253}$	1-244-629-	" 15Ω ¼W, carbon
$R_{154,254}$	1-242-685-	" 3.3kΩ " "
$R_{155,255}$	-685-	" 3.3kΩ " "
$R_{156,256}$	-685-	" 3.3kΩ " "
$R_{157,257}$	1-242-733-	" 330kΩ " "
$R_{158,258}$	-745-	" 1MΩ " "
R_{301}	-675-	" 1.2kΩ " "
R_{302}		– deleted –
R_{303}	1-242-633-	Resistor 22Ω ¼W, carbon
R_{304}	-651-	" 120Ω " "
R_{305}	1-221-630-	Resistor 20kΩ(B), adjustable
R_{306}	1-202-563-	" 390Ω ½W, composition
R_{307}	1-244-646-	" 75Ω ¼W, carbon
R_{401}	1-242-679-	" 1.8kΩ " "
R_{402}	-721-	" 100kΩ " "
R_{403}	-681-	" 2.2kΩ " "
R_{404}	-707-	" 27kΩ " "
R_{405}	-697-	" 10kΩ " "
R_{406}	-727-	" 180kΩ " "
R_{407}	1-221-465-	" 500Ω(B), adjustable
R_{408}	1-242-697-	" 10kΩ ¼W, carbon
R_{409}	-735-	" 390kΩ " "
R_{410}	-697-	" 10kΩ " "
R_{411}	-697-	" 10kΩ " "
R_{412}	-721-	" 100kΩ " "
R_{413}	-721-	" 100kΩ " "
R_{414}	-709-	" 33kΩ " "
R_{415}	-713-	" 47kΩ " "
R_{416}	-721-	" 100kΩ " "
R_{417}	-697-	" 10kΩ " "
R_{418}	-649-	" 100Ω " "
R_{419}		– deleted –
R_{420}	1-221-953-	Resistor 500Ω(B), adjustable
R_{421}	1-242-697-	" 10kΩ ¼W, carbon
R_{422}	-705-	" 22kΩ " "
R_{423}	-665-	" 470Ω " "
R_{424}	-613-	" 3.3Ω " "
R_{425}	-673-	" 1kΩ " "
R_{426}	-621-	" 6.8Ω " "
R_{427}		– deleted –
R_{428}	1-242-697-	Resistor 10kΩ ¼W, carbon
R_{501}	-681-	" 2.2kΩ " "
R_{502}	-681-	" 2.2kΩ " "
R_{503}	-673-	" 1kΩ " "
R_{504}	-673-	" 1kΩ " "
R_{505}	-697-	" 10kΩ " "
R_{506}	-707-	" 27kΩ " "
R_{507}※	-701-	" 15kΩ " "
R_{508}	-701-	" 15kΩ " "
R_{509}	-687-	" 3.9kΩ " "
R_{510}	1-221-371-	" 5kΩ(B), adjustable
R_{511}	1-242-697-	" 10kΩ ¼W, carbon
R_{512}	-707-	" 27kΩ " "
R_{513}※	-704-	" 20kΩ " "
R_{514}	-703-	" 18kΩ " "
R_{515}	-691-	" 5.6kΩ " "
R_{516}	1-221-371-	" 5kΩ(B), adjustable
R_{517}	1-242-701-	" 15kΩ ¼W, carbon
R_{518}	-707-	" 27kΩ " "
R_{519}※	-703-	" 18kΩ " "
R_{520}	-703-	" 18kΩ " "
R_{521}	-691-	" 5.6kΩ " "
R_{522}	1-221-371-	" 5kΩ(B), adjustable
R_{523}	1-242-693-	" 6.8kΩ ¼W, carbon
R_{524}	-685-	" 3.3kΩ " "
R_{525}	-687-	" 3.9kΩ " "
R_{526}	-681-	" 2.2kΩ " "

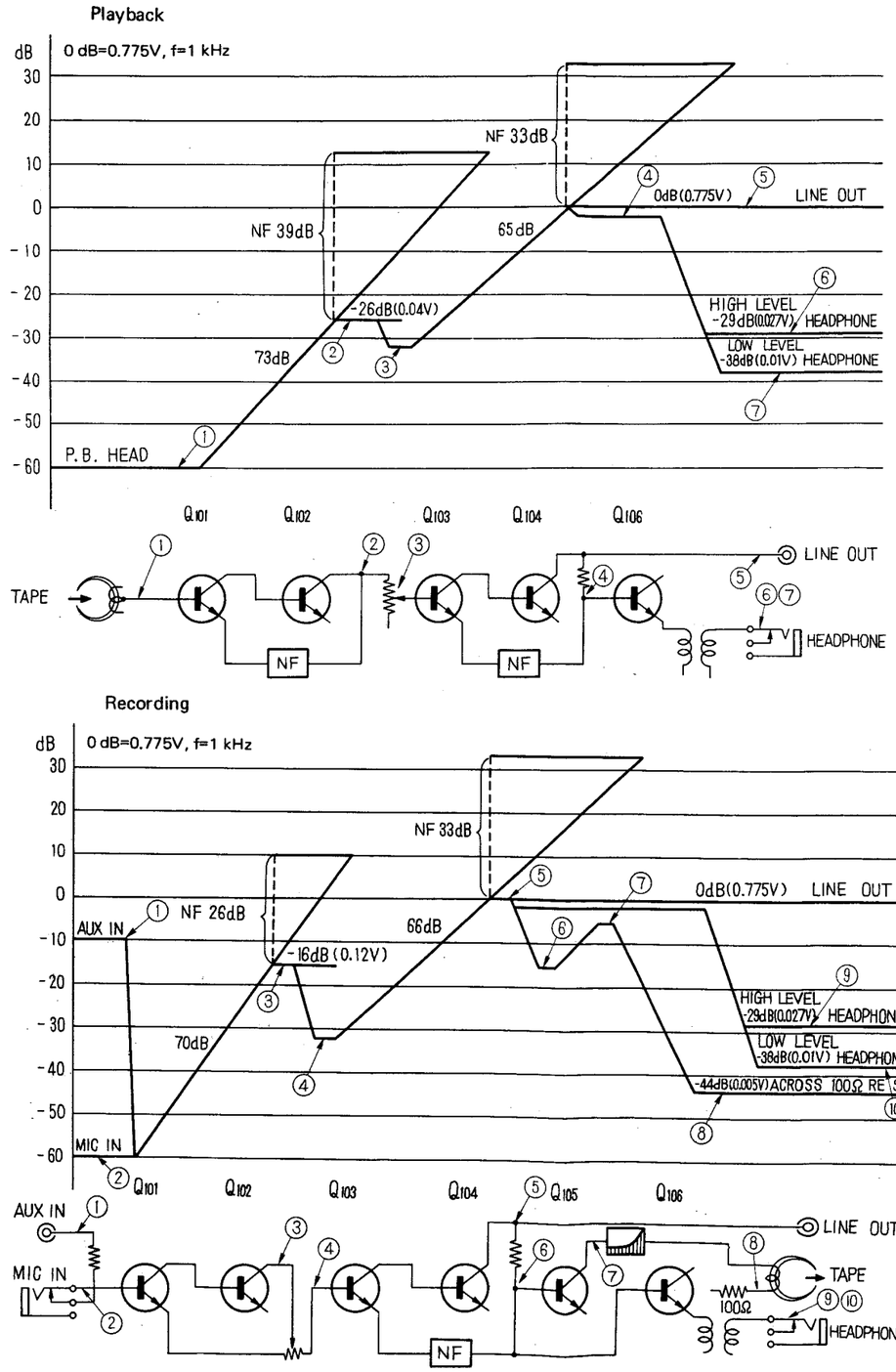
※ To be selected

– Continued –

Symbol	Part No.	Description
R_{527}	1-242-697-	Resistor 10kΩ ¼W, carbon
R_{528}	-709-	,, 33kΩ ,, ,,
R_{529}	-667-	,, 560Ω ,, ,,
R_{530}	-681-	,, 2.2kx ,, ,,
R_{531}	-707-	,, 18kΩ ,, ,,
R_{532}	-705-	,, 22kΩ ,, ,,
R_{533}	-689-	,, 4.7kΩ ,, ,,
R_{534}	-681-	,, 2.2kΩ ,, ,,
R_{535}	-651-	,, 120Ω ,, ,,
R_{536}		– deleted –
R_{537}	1-242-671-	Resistor 820Ω ¼W, carbon
R_{538}	1-244-673-	,, 1kΩ ,, ,,
R_{539}	-637-	,, 33Ω ,, ,,
$C_{101,201}$	1-121-283-	Capacitor 10μF 25V, electrolytic
$C_{102,202}$	-282-	,, 10μF 12V, ,,
$C_{103,203}$	-290-	,, 100μF 3V, ,,
$C_{104,204}$	1-105-661-12	,, 0.001μF, mylar
$C_{105,205}$	1-129-123-	,, 470pF, polyethylene
$C_{106,206}$	1-107-015-	,, 47pF, mica
$C_{107,207}$	1-121-290-	,, 100μF 3V, electrolytic
$C_{108,208}$	1-105-675-12	,, 0.015μF, mylar
$C_{109,209}$	-675-12	,, 0.015μF, ,,
$C_{110,210}$	1-121-282-	,, 10μF 12V, electrolytic
$C_{111,211}$	-357-	,, 100μF 35V, ,,
$C_{112,212}$	-343-	,, 1μF 50V, ,,
$C_{113,213}$	1-127-021-	,, 0.3μF 10V, ,,
$C_{114,214}$	-021-	,, 0.3μF 10V, ,,
$C_{115,215}$	1-121-352-	,, 50μF 10V, ,,
$C_{116,216}$	1-107-015-	,, 47pF, mica
$C_{117,217}$	1-105-675-12	,, 0.015μF, mylar
$C_{118,218}$	1-121-352-	,, 50μF 10V, electrolytic
$C_{119,219}$	1-107-059-	,, 180pF, mica
$C_{120,220}$	1-105-675-12	,, 0.015μF, mylar
$C_{121,221}$	1-121-280-	,, 5μF 12V, electrolytic
$C_{122,222}$	-343-	,, 1μF 50V, ,,
$C_{123,223}$	1-105-679-12	,, 0.033μF, mylar
$C_{124,224}$	-679-12	,, 0.033μF, ,,
$C_{125,225}$	-685-12	,, 0.1μF, ,,
$C_{126,226}$	1-121-282-	,, 10μF 12V, electrolytic
$C_{127,227}$	1-105-661-12	,, 0.001μF, mylar
C_{128}	1-121-354-	,, 50μF 25V, electrolytic
$C_{129,229}$	1-107-005-	,, 220pF, mica
$C_{130,230}$	1-121-442-	,, 1μF 50V, electrolytic
$C_{131,231}$	-470-	,, 10μF 12V, ,,
$C_{132,232}$	-442-	,, 1μF 50V, ,,
$C_{133,233}$	1-141-034-	,, 30~200pF, trimmer
$C_{134,234}$	-034-	,, 30~200pF, ,,
$C_{135,235}$	1-121-352-	,, 50μF 10V, electrolytic
$C_{136,236}$	1-105-671-12	,, 0.0068μF, mylar
$C_{137,237}$	-665-12	,, 0.0022μF, ,,
C_{138}	1-121-442-	,, 1μF 50V, electrolytic
$C_{139,239}$	-442-	,, 1μF 50V, ,,
$C_{140,240}$	1-107-052-	,, 22pF, mica
$C_{141,241}$	-005-	,, 220pF, ,,

Symbol	Part No.	Description
C_{301}	1-129-335-	Capacitor 0.003μF, polyethylene
C_{302}	1-121-350-	,, 33μF 16V, electrolytic
C_{303}	1-106-090-12	,, 0.022μF, mylar
C_{304}	1-121-377-	,, 100μF 25V, electrolytic
C_{305}	1-127-019-	,, 0.1μF 10V, ,,
C_{306}	1-106-115-12	,, 0.001μF, mylar
C_{307}	1-121-339-	,, 100μF 10V, electrolytic
C_{308}	-483-	,, 30μF 10V, ,,
C_{309}	-339-	,, 100μF 10V, ,,
C_{310}	-586-	,, 2000μF 25V, ,,
C_{311}	1-129-181-	,, 750pF, polyethylene
C_{312}	-181-	,, 750pF, ,,
C_{313}	1-121-442-	,, 1μF 50V, electrolytic
C_{401}	1-105-677-12	,, 0.022μF, mylar
C_{402}	1-121-442-	,, 1μF 50V, electrolytic
C_{403}	1-105-675-12	,, 0.015μF, mylar
C_{404}	1-121-449-	,, 2μF 35V, electrolytic
C_{405}	1-105-661-12	,, 0.001μF, mylar
C_{406}	1-121-442-	,, 1μF 50V, electrolytic
C_{407}	-442-	,, 1μF 50V, ,,
C_{408}	-342-	,, 500μF 6V, ,,
C_{409}	-442-	,, 1μF 50V, ,,
C_{410}		– deleted –
C_{411}	1-121-483-	Capacitor 30μF 10V, electrolytic
C_{412}	-339-	,, 100μF 10V, ,,
C_{413}	1-105-829-12	,, 0.0047μF, mylar
C_{501}	1-121-307-	,, 10μF 12V, electrolytic
C_{502}	1-106-106-12	,, 0.1μF, mylar
C_{503}	-102-12	,, 0.068μF, ,,
C_{504}	-094-12	,, 0.033μF, ,,
C_{505}	-106-12	,, 0.1μF ,,
C_{506}	-088-12	,, 0.018μF, ,,
C_{507}	-094-12	,, 0.033μF, ,,
C_{508}	-094-12	,, 0.033μF ,,
C_{509}	-086-12	,, 0.015μF, ,,
C_{510}	-086-12	,, 0.015μF, ,,
C_{511}	-094-12	,, 0.033μF, ,,
C_{512}	-086-12	,, 0.015μF, ,,
C_{513}	-082-12	,, 0.01μF, ,,
C_{514}	-102-12	,, 0.068μF, ,,
C_{515}	-094-12	,, 0.033μF, ,,
C_{516}	-094-12	,, 0.033μF, ,,
C_{517}	-086-12	,, 0.015μF ,,
C_{518}	-090-12	,, 0.022μF ,,
C_{519}	-082-12	,, 0.01μF, ,,
C_{520}	1-121-307-	,, 10μF 12V, electrolytic
C_{521}	-307-	,, 10μF 12V, ,,
C_{522}	-490-	,, 100μF 3V, ,,
C_{523}	-442-	,, 1μF 50V, ,,
C_{524}	-449-	,, 2μF 35V, ,,
C_{525}	-307-	,, 10μF 12V, ,,
C_{526}	1-106-163-12	,, 0.1μF, mylar
C_{527}	1-121-410-	,, 50μF 25V, electrolytic
C_{528}	-442-	,, 1μF 50V, ,,
C_{529}	-410-	,, 50μF 25V, ,,
C_{530}	1-106-013-12	0.0033μF, mylar

13. LEVEL DIAGRAM

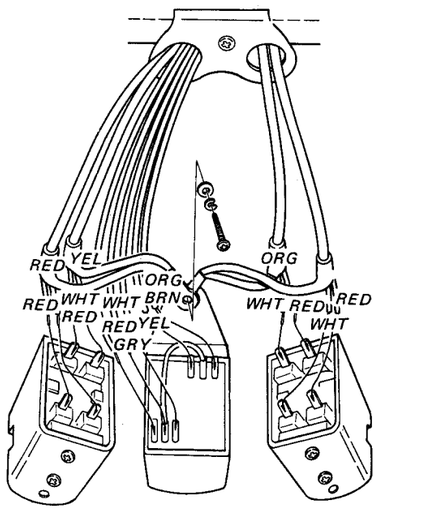


14. ELECTRICAL ADJUSTMENT

Item	Signal Source	Output Connection	Mode	Adjust	Remarks
1. playback azimuth alignment	3rd section (10 kHz) of SONY alignment tape, J-19-F2	VTVM and 100kΩ resistor in parallel to line output	playback (forward & reverse)	azimuth alignment screws See Fig. 14-2	Adjust to obtain maximum reading on VTVM.
2. tape speed adjustment	SONY speed check tape, SPC-47	frequency counter & 100 kΩ resistor in parallel to line output	playback (forward & reverse)	R_{522}... for 1⅞ ips (4.8cm/s) R_{516}... for 3¾ ips (9.5cm/s) R_{510}... for 7½ ips (19cm/s) See Fig.14-2	Adjust to obtain the frequency shown below. tape speed / reading 1-7/8 ips / 1000^{+5}_{-3} Hz 3-3/4 ips / 2000±8 Hz 7-1/2 ips / 4000±15 Hz Note: Each speed adjustment should be performed after 30 sec. from starting.
3. playback level adjustment	1st section (1 kHz) of SONY alignment tape, J-19-F2	VTVM and 100kΩ resistor in parallel to line output	playback (forward & reverse)	R_{124}(L), R_{224}(R) ... forward R_{125}(L), R_{225}(R) ... reverse See Fig. 14-3	Adjust to obtain 0 dB (0.775 V) on VTVM.
4. playback equalizer adjustment	SONY alignment tape, J-19-F2	VTVM and 100kΩ resistor in parallel to line output	playback (forward & reverse)	R_{116}(L), R_{216}(R) ... forward R_{117}(L), R_{217}(R) ... reverse See Fig. 14-3	Deviation against 1 kHz of 2nd section. tape section / 3rd / 4th / 5th / 6th / 7th frequency / 10 kHz / 12.5 kHz / 7 kHz / 100 Hz / 50 Hz L-CH / 1 ± 2 dB / 0 ± 2 dB / 0 ± 2 dB / +2±2 dB / +3±2 dB R-CH / +3.5±2 dB / +5.5±2 dB 1. Adjust to obtain the response shown above. 2. Repeat playback level adjustment again.
5. meter level adjustment	1,000 Hz, -60 dB (0.78 mV) to mic. input	VTVM and 100kΩ resistor in parallel to line output	record (forward)	R_{152}(L), R_{252}(R) See Fig. 14-3	1. Set headphone level switch to "HIGH" 2. Adjust mic. volume control (R_{149} &R_{249}) to obtain 0 dB (0.775 V) on VTVM. 3. Adjust R_{152} & R_{252} so that pointer of level meter indicates 100 on the scale.
6. trap coil adjustment		VTVM and 100kΩ resistor in parallel to line output and VTVM between collector of Q_{105} (Q_{205}) and ground	record (forward & reverse)	L_{104}(L), L_{204}(R) L_{101}(L), L_{201}(R) See Fig. 14-3	1. Turn trimmer capacitor C_{133}(C_{233}) clockwise to the full and return it by approx. one turn. 2. Set machine in forward stereo record mode and rec. volume control to minimum. 3. Adjust L_{104}(L_{204}) to obtain minimum reading on VTVM connected to collector of Q_{105} (Q_{205}). 4. Set rec. volume control to maximum and adjust L_{101}(L_{201}) to obtain minimum reading on VTVM connected to line output jack. 5. Turn trimmer capacitor C_{134}(C_{234}) clockwise to the full and return it by approx. one turn. 6. Set machine in reverse stereo mode and rec. volume control to minimum. 7. Make sure that collector output of Q_{105}(Q_{205}) is less than 0 dB (0.775V). 8. Set rec. volume control to maximum and make sure that line output is less than -20 dB (77.5 mV). 9. In case these values are not obtained in reverse mode, take a middle of minimum values obtained in both modes.
7. recording bias adjustment	1 kHz, -60 dB (0.78 mV) to mic. input	VTVM and 100kΩ resistor in parallel to line output	record & playback (forward & reverse)	C_{133}(L), C_{233}(R) ... forward C_{134}(L), C_{234}(R) ... reverse See Fig. 14-3	1. Set mic. volume control R_{149}(R_{249}) so that pointer of level meter indicates 100 on the scale. 2. Record the signal on a blank tape and playback it. 3. Repeating step 2, adjust trimmer capacitors to obtain maximum playback output level on VTVM.
8. recording level adjustment	1 kHz, -60 dB (0.78 mV) to mic. input	VTVM and 100kΩ resistor in parallel to line output	record & playback (forward & reverse)	R_{139}(L), R_{239}(R) ... forward R_{142}(L), R_{242}(R) ... reverse See Fig. 14-3	1. Set mic. volume control R_{149}(R_{249}) so that pointer of level meter indicates 100 on the scale. 2. Record the signal on a blank tape and playback it. 3. Repeating step 2, adjust the adjustable resistors to obtan +1 dB (0.83 V) on VTVM in playback mode.
9. ESP gain adjustment	1 kHz, -37.5 dB (1mV) to R-CH line output		playback (forward) auto reverse switch : ON	R_{407} See Fig. 14-4	1. Turn R_{407} clockwise to the full and set R_{420} (time adj.) to mechanical mid position. 2. Deliver -37.5 dB (1.0 mV) of 1 kHz signal to line output. 3. Place machine in forward playback mode. 4. After 5 seconds, feed off the input signal. 5. At 12 seconds after that, turn R_{407} counter-clockwise slowly until machine reverses.
10. reverse time adjustment	1 kHz, -8 dB (0.31V) to R-CH line output		playback (forward) auto reverse switch: ON	R_{420} See Fig. 14-4	1. Deliver -8 dB (0.31V) of 1 kHz signal to line output. 2. Place machine in forward playback mode. 3. After 5 seconds, feed off the input signal. 4. Adjust R_{420} so that machine reverses at 8 seconds after the input signal feeds off.

Notes:

(1) The adjustments should be made in numerical order.
(2) The adjustments should be performed at the tape speed of 19 cm/sec (7-1/2 ips), unless otherwise specified.
(3) After adjustments, apply lock paint to the adjusted parts.
(4) The following test equipment is to be provided for these adjustments.
Audio Generator, Attenuator (600Ω), VTVM
100kΩ Resistor, SONY Alignment Tape J-19-F2,
SONY Speed Check Tape SPC-47, Digital Frequency Counter, Blank Tape.
(5) Bias voltage across heads shall be measured with the following values on VTVM.
Rec./P.B. Head: approx. 40 volts
Erase Head: approx. 120 volts



rec/p.b. head, reverse erase head rec/p.b. head, forward

Fig. 14-1 Head Wiring

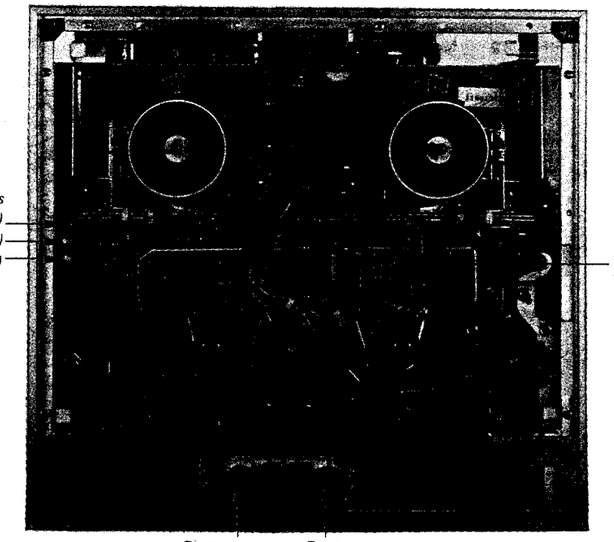


Fig. 14-2 Adjusting Positions

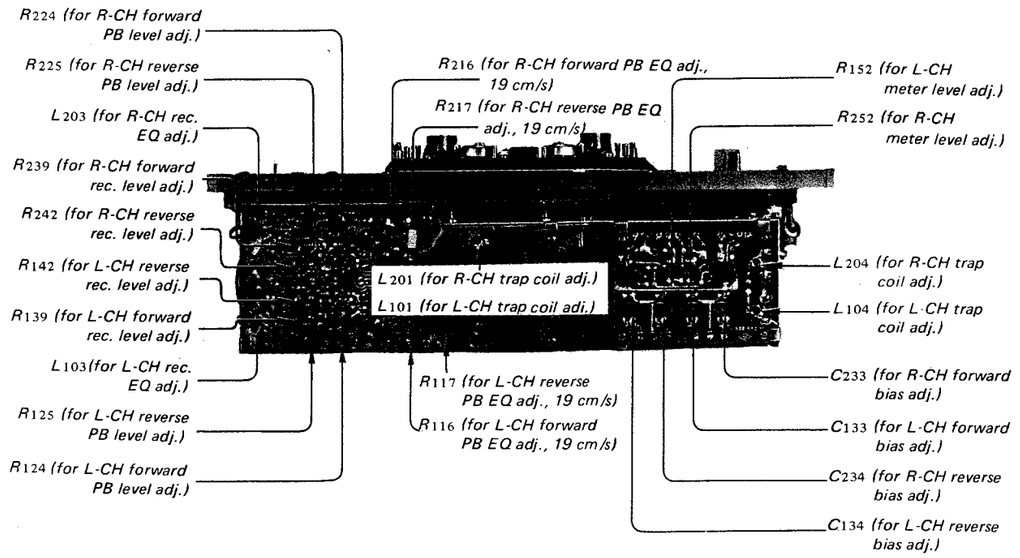

R224 (for R-CH forward PB level adj.)
R225 (for R-CH reverse PB level adj.)
L203 (for R-CH rec. EQ adj.)
R239 (for R-CH forward rec. level adj.)
R242 (for R-CH reverse rec. level adj.)
R142 (for L-CH reverse rec. level adj.)
R139 (for L-CH forward rec. level adj.)
L103 (for L-CH rec. EQ adj.)
R125 (for L-CH reverse PB level adj.)
R124 (for L-CH forward PB level adj.)
R216 (for R-CH forward PB EQ adj., 19 cm/s)
R217 (for R-CH reverse PB EQ adj., 19 cm/s)
L201 (for R-CH trap coil adj.)
L101 (for L-CH trap coil adj.)
R117 (for L-CH reverse PB EQ adj., 19 cm/s)
R116 (for L-CH forward PB EQ adj., 19 cm/s)
R152 (for L-CH meter level adj.)
R252 (for R-CH meter level adj.)
L204 (for R-CH trap coil adj.)
L104 (for L-CH trap coil adj.)
C233 (for R-CH forward bias adj.)
C133 (for L-CH forward bias adj.)
C234 (for R-CH reverse bias adj.)
C134 (for L-CH reverse bias adj.)

Fig. 14-3 Adjusting Positions

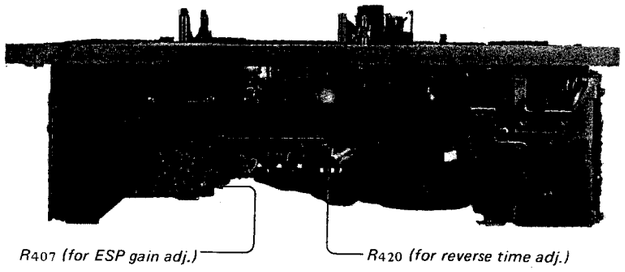
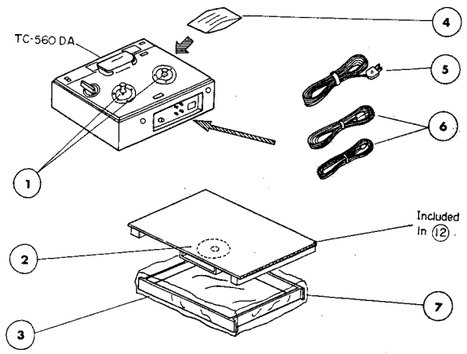


Fig. 14-4 Adjusting Positions

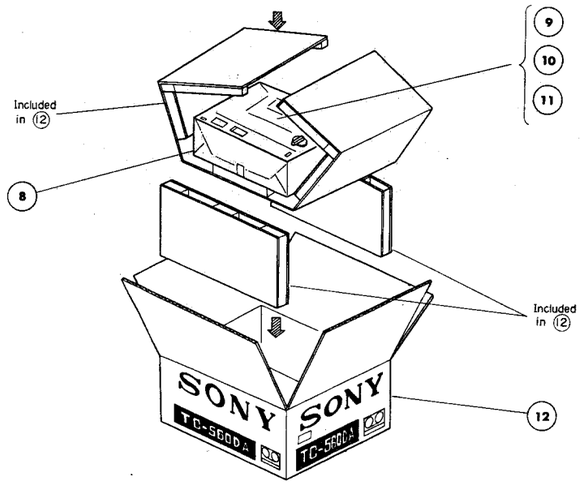
15. EXPLODED VIEW

15-1. Packing

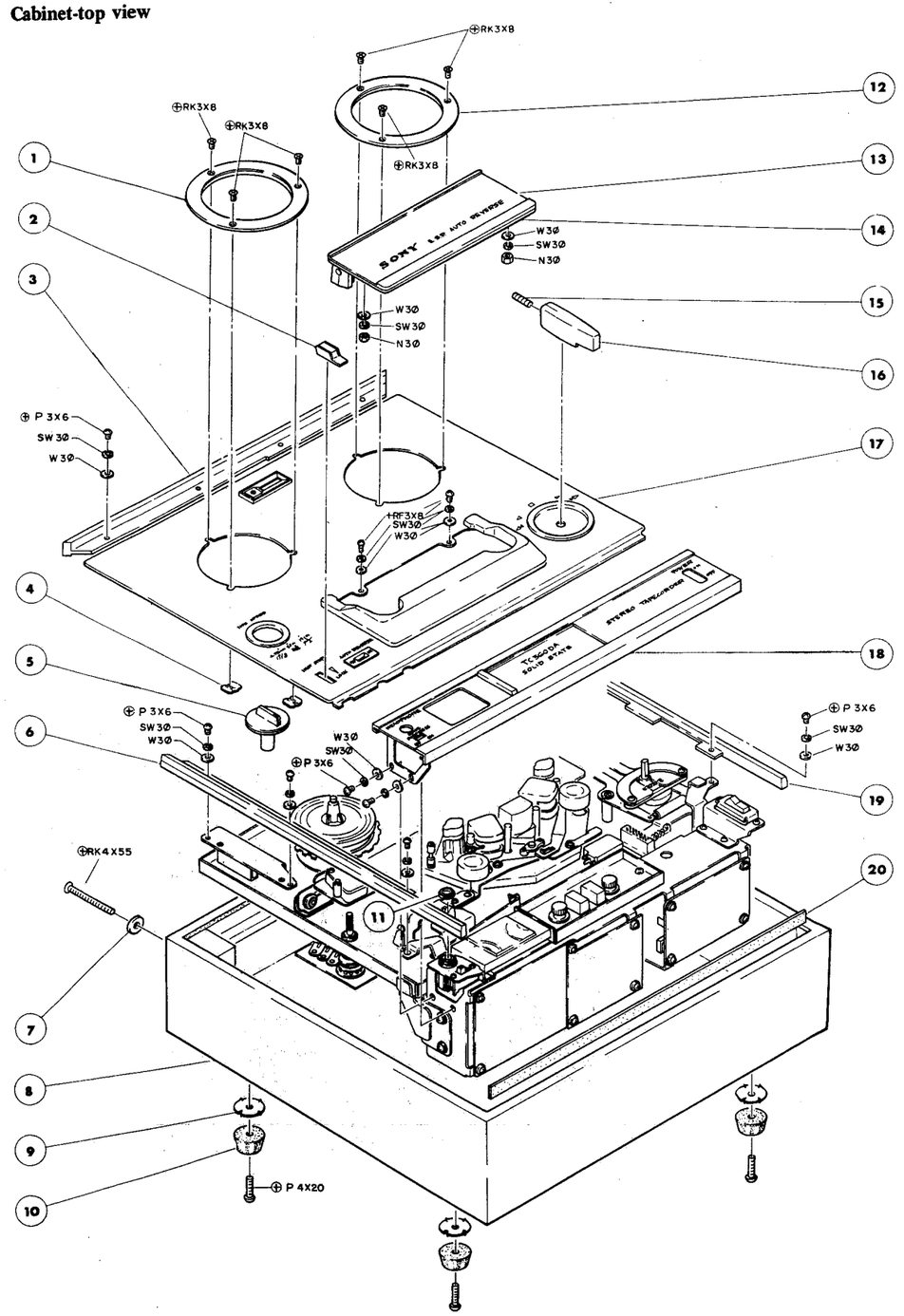


– Parts List for Packing –

Ref.No.	Part No.	Description
1	X-34090-35	Reel Cap Ass'y
2	8-860-107	Reel, empty; R-7A
3	2-045-404	Bag, polyethylene
4	7-491-001	Desiccant
5	1-534-518	Cord, power
6	-049	Cord, connection
7	2-045-401	Protector, dust; DP-560D
8	3-437-459	Bag, polyethylene
9	3-790-301-12	Manual, instruction
10	3-793-710	Booklet, tape talk
11	X-37010-18	Pen Ass'y, head cleaning
12	X-34378-01	Carton Ass'y



15-2. Cabinet-top view



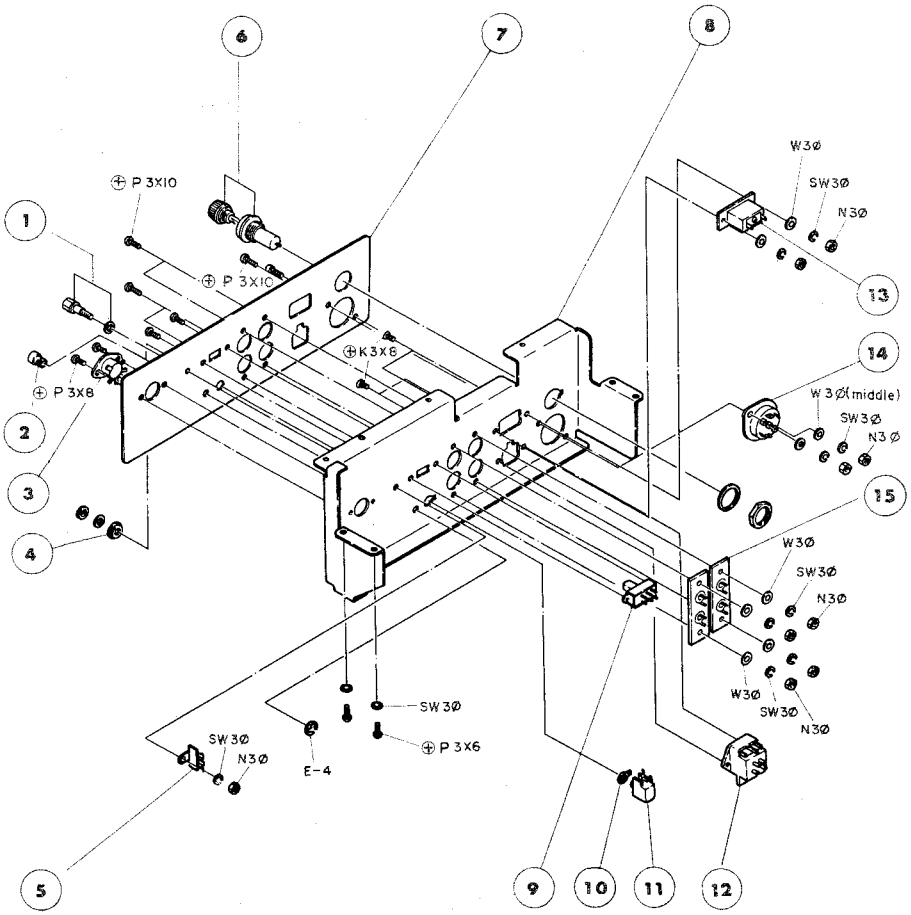
– Parts List for Cabinet-top view –

Ref. No.	Part No.	Description
1	3-437-235	Ring, ornamental; reel panel
2	-271	Knob, instant stop
3	-430	Sash (A), cabinet
4	3-819-519	Nut, special
5	X-34370-55	Knob Ass'y, speed selector
6	3-437-431	Sash (B), cabinet
7	3-103-206	Washer, retainer
8	X-34374-12	Cabinet Ass'y
9	3-403-724	Stopper, rubber foot
10	0-051-263	Foot, rubber
11	3-437-436	Insulator, binaural jack
12	-235	Ring, ornamental; reel panel
13	-242	Name Plate, head cover
14	X-34370-54	Head Cover Ass'y
15	3-437-325	Set Screw, 4ϕ x 10
16	-236	Knob, function selector
17	X-34370-53	Reel Panel Ass'y
18	X-34680-01	Sash Ass'y, front
19	3-437-432	Sash (C), cabinet
20	3-437-463	Felt, cabinet

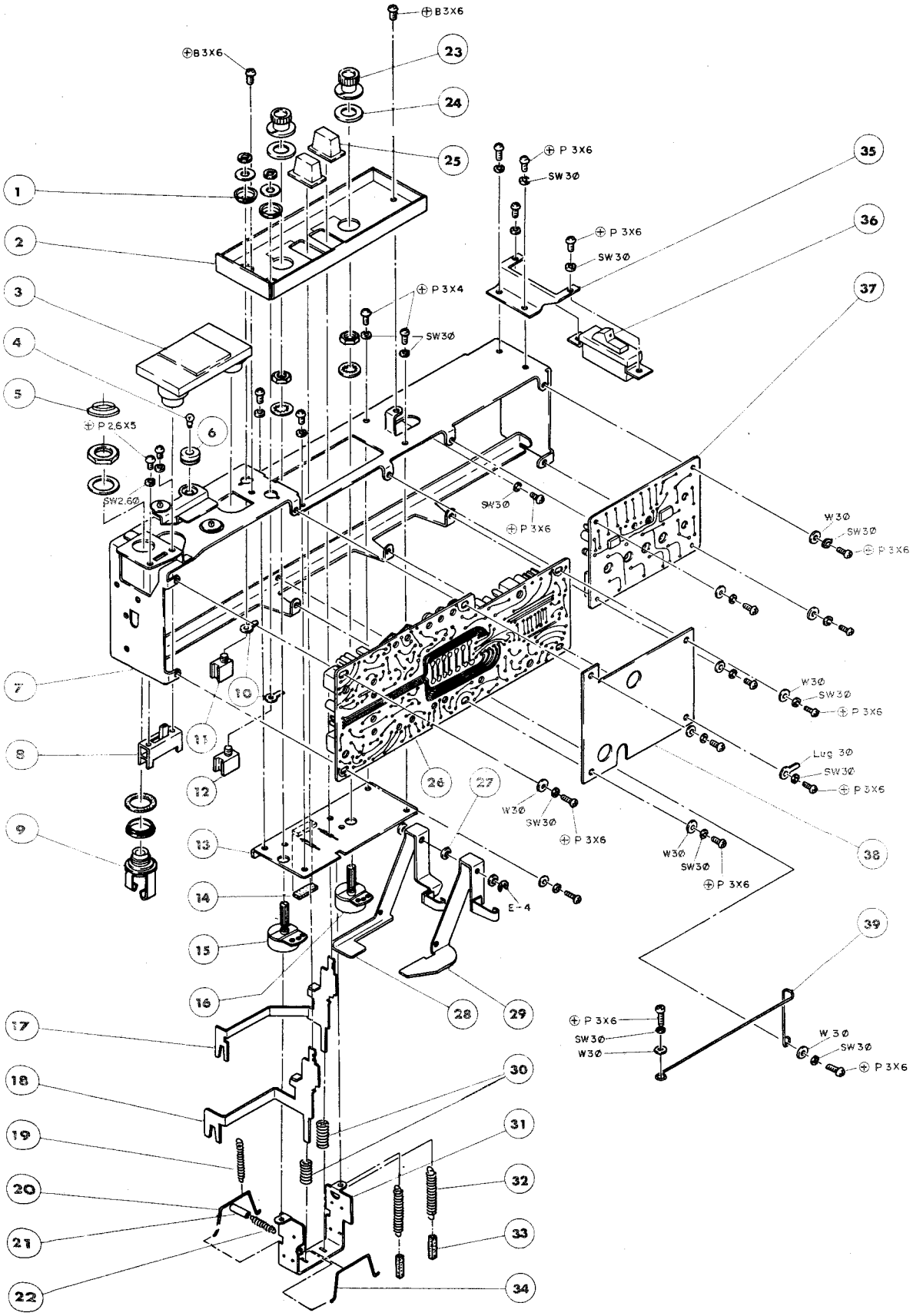
– Parts List for Jack Panel-top view –

Ref. No.	Part No.	Description
1	X-20319-01	Terminal Ass'y, ground
2	3-437-252	Jack, dummy
3	1-509-029	Connector, rec./p.b.
4	3-437-229	Insulator, miniature jack
5	1-536-181	Terminal Strips (2L1)
6	1-533-048	Post, fuse
7	3-437-701	Plate, ornamental; power chassis
8	-434	Chassis, panel
9	1-513-091	Switch, slide; S6
10	3-437-228	Insulator, miniature jack
11	1-507-188	Jack, speed tuning; J301
12	1-509-320	Connector w/switch, power; CNJ301
13	-015	Outlet, power; CNP301
14	1-509-064-13S	Selector, voltage
15	1-507-142	Jack, 2P pin

15-3. Jack Panel-top view



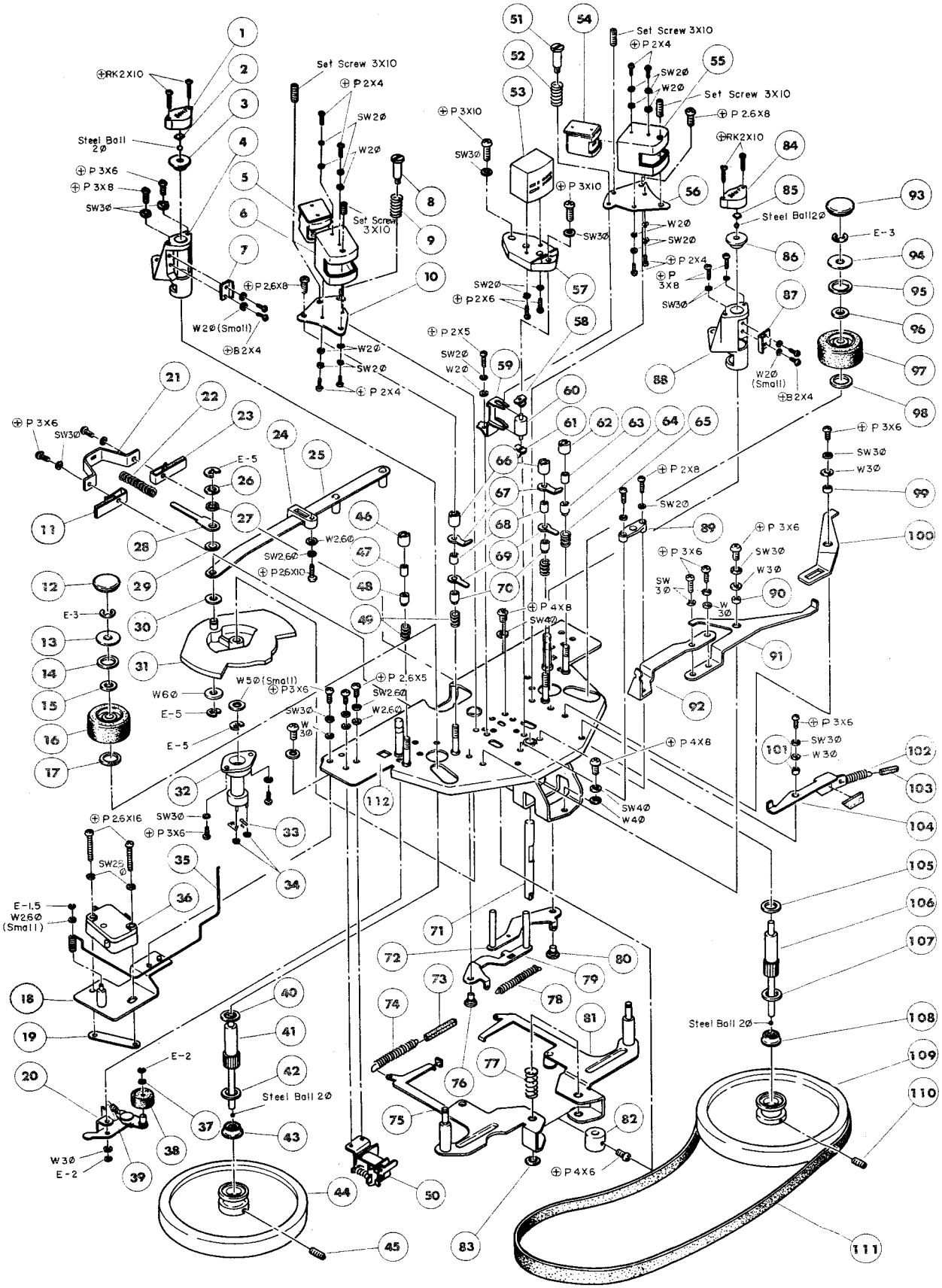
15-4. Control Deck-top view



– Parts List for Control Deck-top view –

Ref. No.	Part No.	Description
1	3-437-229-11	Insulator, miniature jack
2	-433	Plate, ornamental; record
3	1-524-051	Meter, level
4	1-518-051	Lamp, pilot
5	3-437-436	Insulator, binaural jack
6	0-214-123	Cushion, rubber; pilot lamp
7	3-437-446	Chassis, amplifier
8	1-514-461	Switch, noise suppress
9	1-507-282-21	Jack, headphone
10	3-437-228	Insulator, miniature jack
11	1-507-188	Jack, miniature
12	-188	Jack, miniature
13	X-34374-04	Bracket Ass'y, record holder
14	3-437-441	Damper
15	1-221-923	Potentiometer; R149
16	-923	Potentiometer; R249
17	3-437-442	Plate (A), lock; record
18	-443	Plate (B), lock; record
19	3-432-150	Spring
20	3-430-212	Rod, lock
21	3-437-439	Collar, record lock rod
22	-284	Spring
23	-275	Knob, volume control
24	3-408-069	Felt, volume control knob
25	X-34130-11	Button Ass'y, record
26	X-34374-51-1	Mounted Circuit Board, preamplifier
27	3-409-163	Washer, thrust; idler
28	X-34374-05	Lever Ass'y, record; large
29	-06	Lever Ass'y, record; small
30	3-430-213	Spring
31	3-437-444	Holder, record
32	3-428-133	Spring
33	3-420-076	Absorber, vibration
34	3-430-212	Rod, lock
35	3-437-422	Bracket, power switch
36	1-514-458-15S	Switch, power
37	X-34374-53-1	Mounted Circuit Board, headphone amp.
38	3-437-447	Paper, shield
39	-450	Guide, wire

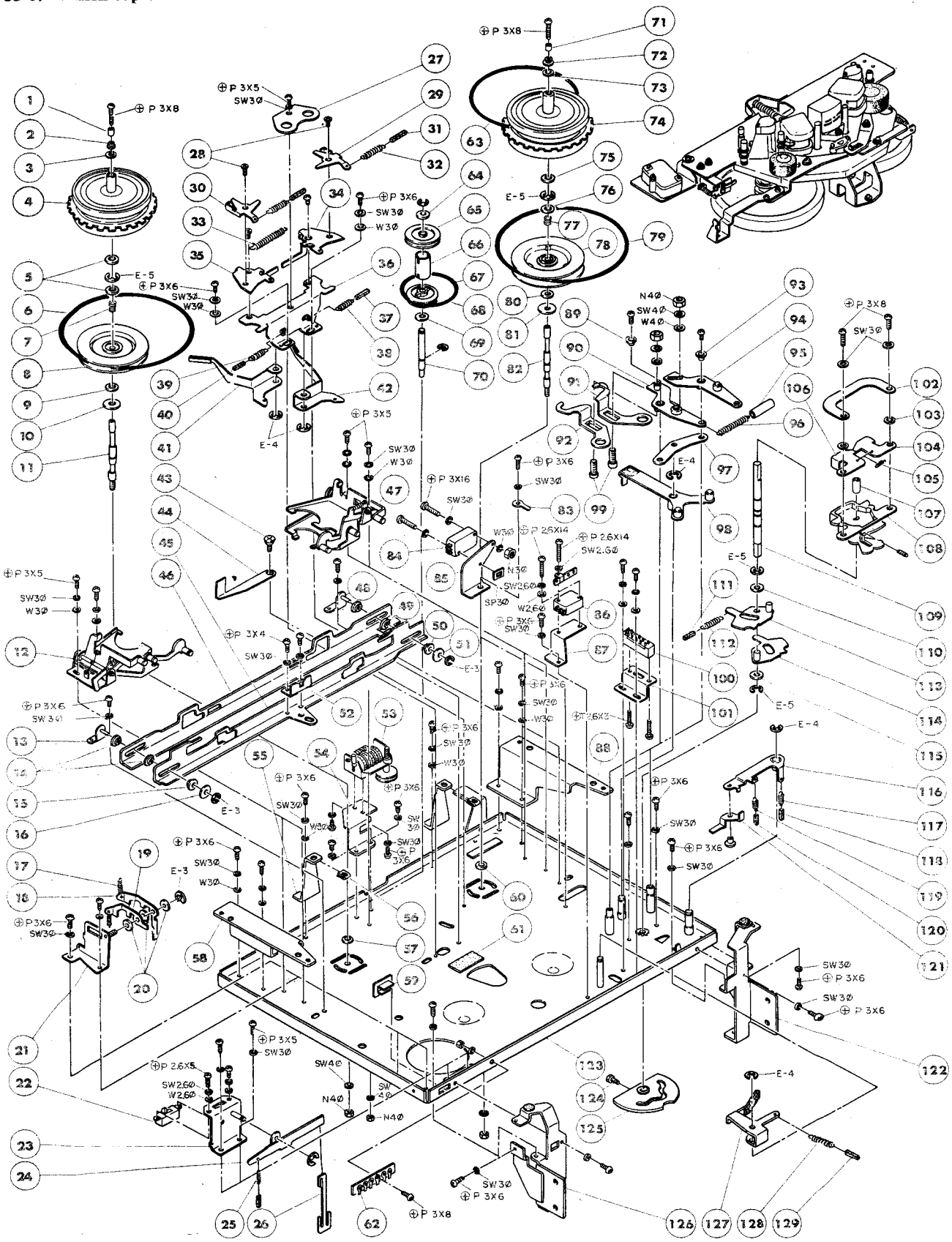
15-5. Head Deck-top view



– Parts List for Head Deck-top view –

Ref. No.	Part No.	Description
1	3-437-157	Cover, capstan shaft holder
2	-159	Washer, thrust adjusting
3	-158	Retainer, capstan
4	-155	Holder, capstan; left
5	8-822-542-25	Head, rec./p.b. head; PP77-4202A
6	3-437-294	Case, shield
7	-333	Guard, tape
8	-173	Screw, head adjusting
9	-352	Spring, head adjusting
10	-174	Bracket, head holder
11	X-34370-63	Stopper Ass'y, direction change
12	3-430-232	Cap, pinch roller
13	-234	Washer, pinch roller
14	-231	Ring, oil; pinch roller
15	-235	Washer, pinch roller
16	3-437-162	Roller, pinch
17	3-425-197	Washer, thrust
18	X-34370-26	Bracket Ass'y, actuator
19	3-437-264	Plate, micro switch retainer
20	X-34370-20	Lever Ass'y, reversing idler
21	3-437-245	Bracket, direction change arm
22	-295	Spring, direction change
23	X-34370-63	Stopper Ass'y, direction change
24	3-438-248	Guide, slider
25	X-34370-32	Slider Ass'y
26	3-420-075	Washer, thrust; nylon
27	3-437-313	Collar, arm; direction change
28	-246	Arm, direction change
29	3-416-147	Washer, slider
30	3-420-075	Washer, thrust; nylon
31	3-437-237	Cam, direction change
32	-164	Shaft, head change
33	3-437-248	Spring, head change switch
34	3-811-790	Retaining Ring, special CS type
35	3-437-168	Actuator
36	1-514-231	Switch, micro; S503
37	3-405-458	Washer, idler thrust
38	3-437-161	Roller
39	-285	Spring
40	-343	Felt, oil retainer
41	-153	Shaft, capstan
42	-343	Felt, oil retainer
43	-158	Retainer, capstan
44	-154	Flywheel
45	-301	Set Screw, 3ϕ × 6; flywheel
46	-307	Guide (C), tape
47	-306	Guide (B), tape
48	-305	Guide (A), tape
49	3-103-238	Spring, tape guide
50	1-452-021	Magnet, plunger
51	3-437-173	Screw, head adjusting
52	-352	Spring, head adjusting
53	8-828-429	Head, erase
54	8-822-542-26	Head, rec./p.b. head; PP77-4202B
55	3-437-294	Case, shield
56	3-437-174	Bracket, head holder
57	-244	Bracket, erase head holder
58	-171	Retainer, roller shaft
59	-172	Bracket, roller holding
60	-170	Roller
61	-171	Retainer, roller shaft
62	-307	Guide (C), tape
63	-306	Guide (B), tape
64	-305	Guide (A), tape
65	3-103-238	Spring, tape guide
66	3-437-307	Guide (C), tape
67	-309	Retainer, tape guide
68	-306	Guide (B), tape
69	-310	Retainer, tape guide
70	-305	Guide (A), tape
71	X-34370-23	Shaft Ass'y, pinch lever
72	-24	Arm Ass'y, shifter; right
73	3-420-076	Absorber, vibration
74	3-437-280	Spring
75	X-34370-22	Lever Ass'y, pinch lever; right
76	3-425-185	Shaft, brake shifter
77	3-437-291	Spring, pinch lever shaft
78	3-425-131	Spring
79	X-34370-25	Arm Ass'y, shifter; left
80	3-425-185	Shaft, brake shifter
81	X-34370-21	Lever Ass'y, pinch lever; left
82	3-437-163	Washer, pinch lever fitting
83	-336	Cushion, pinch lever
84	-157	Cover, capstan shaft holder
85	-159	Washer, thrust adjusting
86	-158	Retainer, capstan
87	-333	Guard, tape
88	-156	Holder, capstan; right
89	-175	Guide, pinch lever shaft
90	-312	Collar, control lever
91	-181	Shifter, pinch roller; long
92	-257	Lever, instant stop
93	3-430-232	Cap, pinch roller
94	-234	Washer, pinch roller
95	-231	Ring, oil; pinch roller
96	-235	Washer, pinch roller
97	3-437-162	Roller, pinch
98	3-425-197	Washer, thrust
99	3-437-312	Collar, cam claw
100	-180	Shifter, pinch roller; short
101	-312	Collar, cam claw
102	3-426-155	Spring
103	3-420-076	Absorber, vibration
104	3-437-179	Lever, brake shifter
105	-343	Felt, oil retainer
106	-153	Shaft, capstan
107	-343	Felt, oil retainer
108	-158	Retainer, capstan
109	-154	Flywheel
110	-301	Set Screw 3ϕ × 6, flywheel
111	-191	Belt, capstan
112	X-34370-02	Head Deck Ass'y

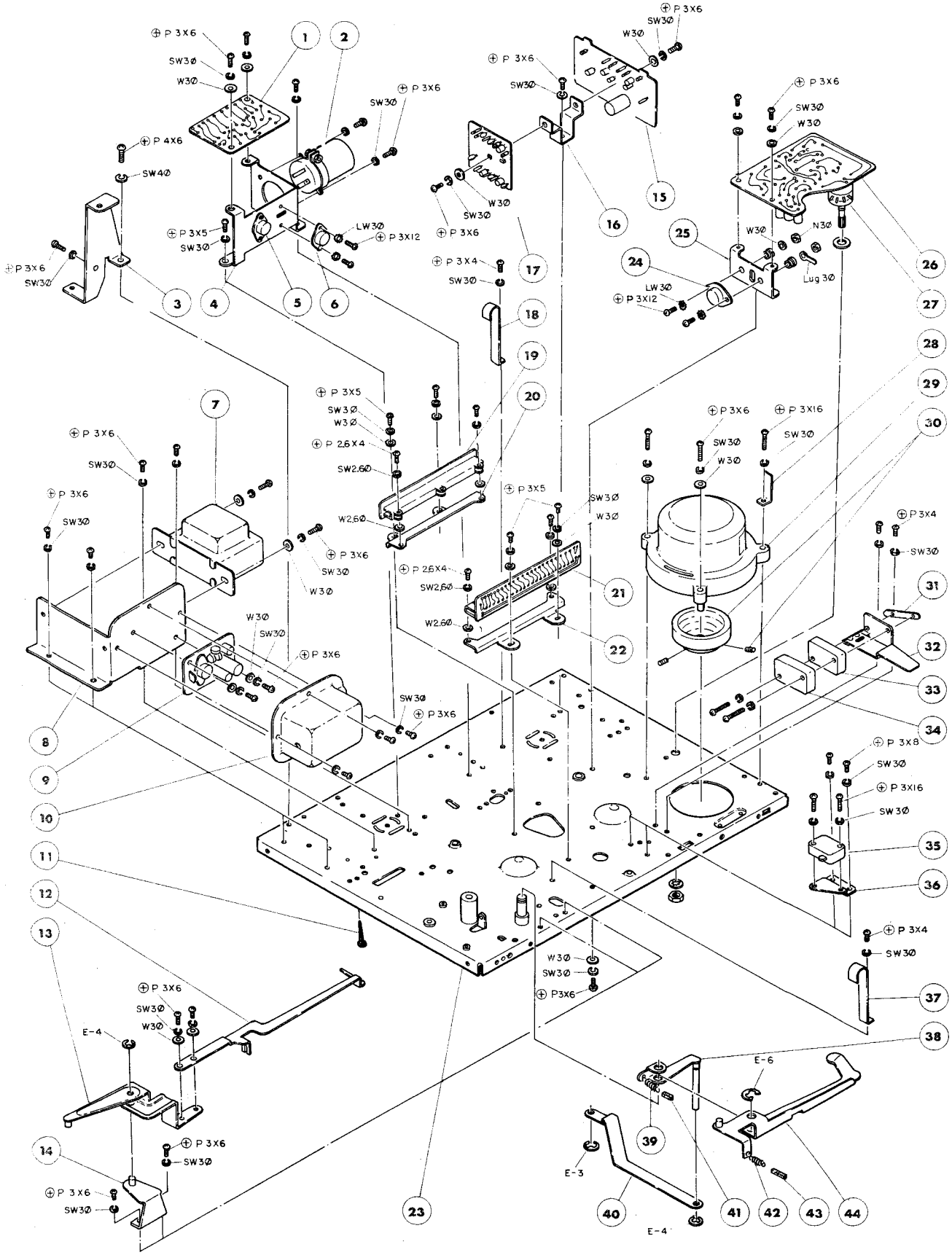
15-6. Chassis-top view



– Parts List for Chassis-top view –

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	3-409-202	Washer, reel cap; small	65	3-407-040	Pulley, tape index counter belt
2	-201	Washer, reel cap; large	66	3-437-189	Spacer, tape index counter; sleeve
3	3-419-096	Washer, reel shaft	67	3-407-042	Belt, tape index counter; small
4	X-34370-15	Reel Table Ass'y, feed	68	-040	Pulley, tape index counter belt
5	3-416-147	Washer, reel shaft,	69	3-425-197	Washer, thrust
6	3-437-190	Belt, reel table	70	3-437-188	Shaft, tape index counter holder
7	-292	Spring, reel shaft	71	3-409-202	Washer, reel cap. small
8	X-34370-18	Reel Spindle Drum Ass'y	72	-201	Washer, reel cap; large
9	3-416-147	Washer, reel shaft	73	3-419-096	Washer, reel shaft
10	3-437-152	Washer, spring holder	74	X-34370-15	Reel Table Ass'y, take-up
11	-149	Shaft, reel table	75	3-416-147	Washer, reel shaft
12	X-34370-11	Lever Ass'y, friction change; left	76	-147	Washer, reel shaft
13	X-34370-03	Bracket Ass'y, slider	77	3-437-151	Spring
14	3-437-148	Roller, slider fitting	78	X-34370-18	Reel Spindle Drum Ass'y
15	3-808-432	Washer	79	3-437-190	Belt, reel table
16	3-437-326	Washer	80	3-416-147	Washer, reel shaft
17	3-432-079	Spring	81	3-437-152	Washer, spring holder
18	3-437-262	Bracket (A), instant stop lock	82	-149	Shaft, reel table
19	-263	Bracket (B), instant stop lock	83	3-401-179	Holder, lead wire
20	3-430-234	Washer	84	1-514-057	Switch, micro; S504
21	X-34370-41	Bracket Ass'y, instant stop lock	85	3-437-186	Bracket, micro switch holder
22	1-513-091	Switch, slide; S403	86	1-514-057	Switch, micro; S506
23	X-34374-07	Bracket Ass'y, auto-reverse	87	3-437-192	Bracket, instant stop switch holder
24	3-437-440	Lever, instant stop release	88	-421	Bracket, cabinet sash
25	-452	Spring, instant stop lever	89	-311	Collar, control lever
26	-259	Lever, instant stop	90	X-34370-31	Lever Ass'y, slider control; left
27	-253	Retainer, lead wire	91	3-437-184	Bracket , slider adjusting; right
28	3-425-185	Shaft, brake shifter	92	-183	Bracket, slider adjusting; left
29	X-34250-24	Brake Ass'y, reel table (right)	93	-311	Collar, control lever
30	-23	Brake Ass'y, reel table (left)	94	X-34370-30	Lever Ass'y, slider control; right
31	3-420-076	Absorber, vibration	95	3-437-334	Stopper, pinch lever
32	3-436-076	Spring	96	3-418-074	Spring
33	3-437-283	Spring	97	3-437-182	Plate, slider operation lever shaft
34	-178	Brake, reel table; right	98	X-34370-87	Change Lever Ass'y, fast forward
35	-177	Brake, reel table; left	99	3-437-185	Screw, slider adjusting
36	X-34370-47	Bracket Ass'y, brake block	100	1-514-232	Switch, slide; S301
37	3-420-076	Absorber, vibration	101	3-437-195	Bracket, switch holder
38	3-426-141	Spring	102	-243	Plate, cam retainer
39	-141	Spring	103	-312	Collar, cam claw
40	3-420-076	Absorber, vibration	104	-194	Bracket
41	X-34370-43	Lever Ass'y, back tension; left	105	-284	Spring
42	-44	Lever Ass'y, back tension; right	106	-197	Bracket, cam operation; left
43	3-425-185	Shaft, brake shifter	107	-335	Cushion, cam
44	X-34370-28	Lever Ass'y, brake shifter; left	108	-198	Cam, selector
45	3-437-146	Slider, forward	109	-193	Shaft, cam
46	-147	Slider, fast forward	110	3-420-075	Washer, thrust; nylon
47	X-34370-10	Lever Ass'y, friction change; right	111	-076	Absorber, vibration
48	-03	Bracket Ass'y, slider	112	3-426-155	Spring, control lever rewind
49	3-437-148	Roller, slider fitting	113	X-34370-38	Cam Ass'y, stepper arm; left
50	3-808-432	Washer	114	-39	Cam Ass'y, stepper arm; right
51	3-437-326	Washer	115	3-420-075	Washer, thrust; nylon
52	-344	Guide, pinch lever	116	X-34370-34	Stepper Arm Ass'y
53	Y-20410-12	Counter, tape index; Z1 type	117	3-437-337	Spring
54	3-437-187	Bracket, tape index counter holder	118	3-420-076	Absorber, vibration
55	-225	Bracket, reel panel holder	119	3-437-282	Spring
56	-277	Nut, speed U type	120	3-420-076	Absorber, vibration
57	-150	Collar, reel shaft	121	3-437-199	Lever, switch movement
58	-233	Bracket, sash mounting	122	-424	Plate (A), leg
59	-451	Guide, lever	123	X-34370-01	Base Plate Ass'y, chassis
60	-150	Collar, reel shaft	124	3-419-080	Set Screw
61	-339	Supporter, slider	125	3-437-196	Bracket, selector cam
62	1-536-183	Terminal strips 2-L-3	126	-425	Plate (B), leg
63	3-425-143	Belt, tape index counter	127	X-34370-65	Brake Ass'y, flywheel
64	-197	Washer, thrust	128	3-426-506	Spring
			129	3-420-076	Absorber, vibration

15-7. Chassis-bottom view



– Parts List for Chassis-bottom view –

Ref. No.	Part No.	Description
1	X-34374-57-1	Mounted Circuit Board, power supply & bias osc.
2	1-121-586	Capacitor, electrolytic; 200μF 25V
3	3-437-426	Plate (A), leg
4	-437	Bracket, power supply & bias osc.
5		Transistor, 2SD28; Q303
6		Transistor, 2SD28; Q301
7	1-441-402	Transformer, power
8	3-437-427	Bracket, power transformer
9	X-34374-56-1	Mounted Circuit Board, dc-dc converter
10	3-437-428	Case, shield
11	3-103-527	Binder
12	3-437-445	Lever, record control
13	X-34374-08	Bracket Ass'y, control lever
14	-09	Bracket Ass'y, record lever
15	-58-1	Mounted Circuit Board, ESP amplifier
16	3-437-449	Bracket, printed circuit board
17	X-34374-60-1	Mounted Circuit Board, noise suppress
18	3-437-266	Retainer, wire
19	X-34374-55-1	Mounted Circuit Board, forward/reverse selector (B)
20	3-437-165	Bracket, head change-over switch
21	X-34374-54-1	Mounted Circuit Board, forward/reverse selector (A)
22	3-437-165	Bracket, head change-over switch
23	X-34370-01	Base Plate Ass'y, chassis
24		Transistor, 2SD28; Q506
25	3-437-213	Heat Sink (B)
26	X-34374-59-1	Mounted Circuit Board, servo amplifier
27	1-513-362	Switch, rotary; S501
28	3-437-265	Retainer, wire
29	8-834-509	Motor
30	X-34370-84	Motor Pulley Ass'y
31	3-437-264	Plate, micro switch retainer
32	X-34374-10	Bracket Ass'y, switch
33	1-514-057	Switch, micro; S505-1
34	-057	Switch, micro; S505-2
35	-231	Switch, micro; S502
36	3-437-167	Bracket, micro switch holder
37	-266	Retainer, wire
38	X-34370-29	Lever Ass'y, brake shifter; right
39	3-437-279	Spring
40	-176	Joint, brake lever
41	3-420-076	Absorber, vibration
42	3-437-331	Spring
43	3-420-076	Absorber, vibration
44	X-34370-27	Lever Ass'y, retractive

—— Hardware Nomenclature ——

P – Pan Head Screw .....

K – Flat Countersunk Head Screw.....

B – Binding Head Screw .....

RK – Oval Countersunk Head Screw .....

T – Truss Head Screw .....

R – Round Head Screw .....

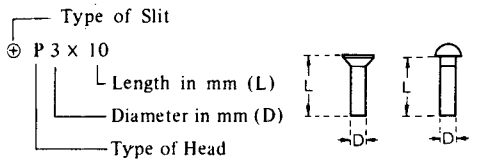
F – Flat Fillister Head Screw .....

SC – Set Screw .....

E – Retaining Ring (E Washer) .....

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

— Example —



When ordering replacement parts you should use PART NUMBER listed on the Parts Lists beside each exploded view.
The reference number or symbol number should not be used for ordering purposes.